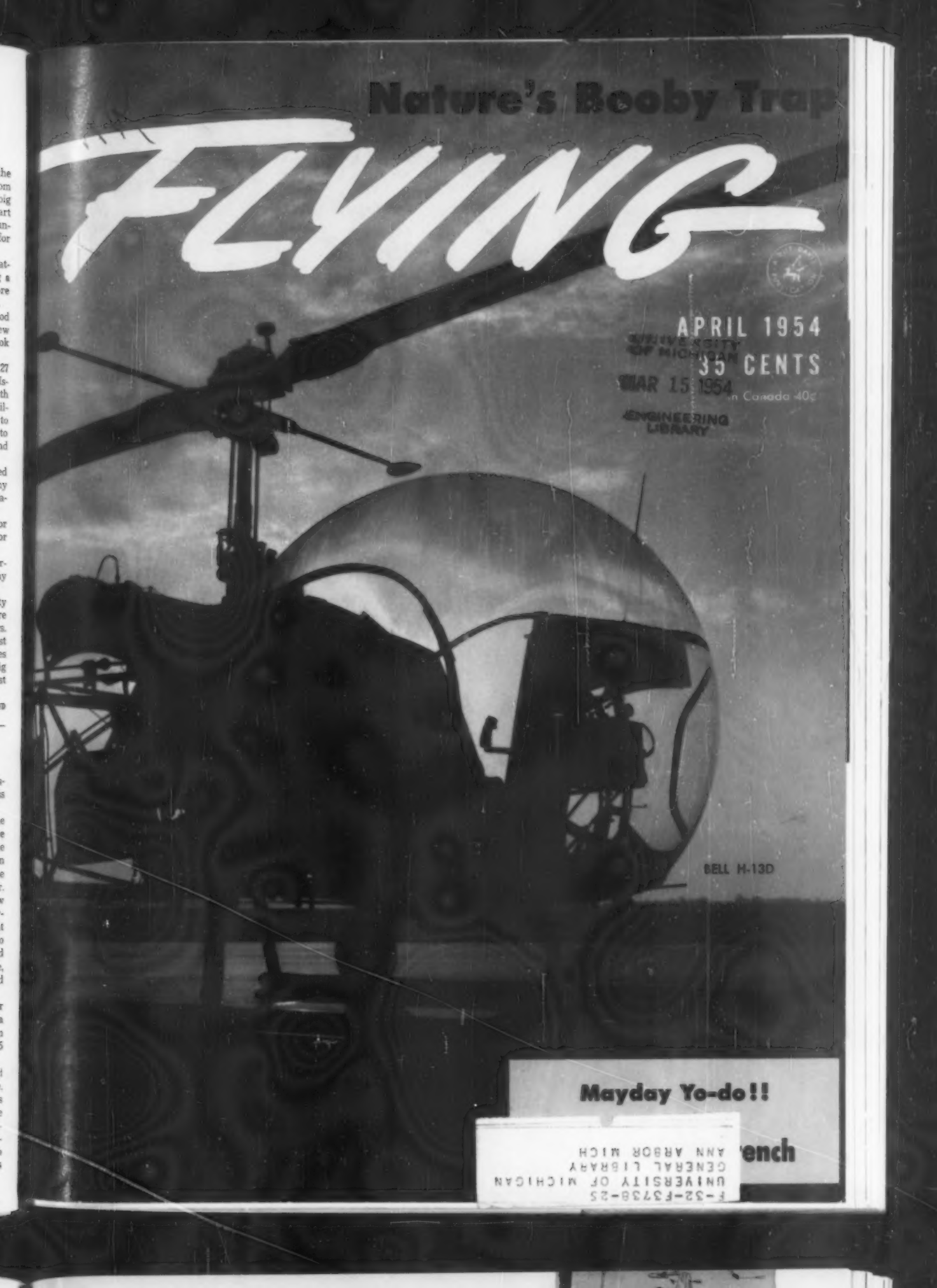

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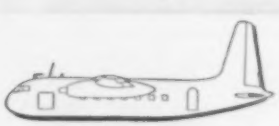

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APRIL, 1954 VOLUME 54, NUMBER 4

# FLYING

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THE COVER: A Bell H-13D helicopter photographed by Art Meyer at Houston, against a Texas sunset.

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*The Piper Aircraft family, like that of each other family in the Genealogy of American Aircraft, has made its own unique and unduplicated contribution, without which the sum total of American airpower would have been the poorer.*

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# MAIL BOX

### MACH?

Please explain the term Mach.

Parkersburg, W. Va. A. R. W.

• *A Mach number expresses the ratio of the true velocity of an airplane to the speed of sound. Since the speed of sound varies with density of the atmosphere, it therefore varies with altitude. Under standard atmospheric conditions, the speed of sound at sea level is approximately 760 mph but, for example, at 40,000 ft., under standard conditions, would be 100 miles less, or 660 mph.*

*High speed aircraft are equipped with an instrument known as a Mach Meter. It combines an airspeed mechanism with an altimeter mechanism and informs the airman of his speed relative to the speed of sound at varying altitudes.*—ED.

### SALTON SEA FOREVER

Lt. Comdr. Verdin set his speed record in the Douglas F4D *Skyray* at 753.4 mph over the Salton Sea speed course and not over Edwards AFB at Muroc. We here in Coachella Valley are proud that Salton Sea was picked during the hot weather for this 3-kilometer course.

Both North American and Douglas keep their aircraft at El Centro Naval Base during these speed runs. Thermal Air Base, nearest to the Salton Sea speed course, is headquarters for personnel covering the speed runs and is an exciting spot. We at Thermal have been happy to find a good use for the airport during summer heat when most people shun the desert.

This oasis in the desert is rapidly becoming an aviation center. Come see us!

ELEANOR WAGNER
Coachella Valley Air Service
Thermal, Cal.

### GLAD TO OBLIGE

Many thanks for printing a Mail Box letter in Jan. issue headed Cadet Qualifications. And thanks to Messrs. Jones, Stock, Bergey and Holleman for their views. They give me renewed hope to become an Air Force cadet.

JOHN C. MILLER
Zanesville, Ohio

---

Just want you to know that FLYING is of great interest to a prospective flyer. It is wonderful to find writing that makes so much sense. Boy, it's appreciated.

F. GEBHARDT
Cleveland, Ohio

---

I am a long time subscriber to FLYING and have found it of great help to my flying career during my stay in the United States. Might I mention that in a recent issue I noted that a prop installed on a Wright R-3350 was a Curtiss Electric rather than a Hamilton Standard Hydromatic.

EDWIN REES
San Jose, Costa Rica

### HUNGRY AIRMEN ATTENTION!

I claim that Heron Field, one mile east of Blythe, Cal., holds a world record for eating and sleeping accommodations . . . within five minutes walk, 4 wonderful restaurants and 15 motels, including 5 swimming pools!

DONALD KAEGI
Blythe, Cal.

### OLD FAITHFUL

I noted that one recent issue of FLYING omitted the regular feature, "I Learned About Flying From That." This feature is very valuable. Hope you are not dropping it.

HOWARD MANGOLD

• *Have no fears.*—ED.

### WHEN CROWS WALK

This icing developed on the prop of my *Cub* while turning up for 10 minutes at 1200 rpm in foggy weather slightly above freezing. When I shut off the engine the ice soon melted and fell off. Repeated experiments produced same results.

Edgewood, Md. GEORGE E. THOMPSON

### MIGHTY CARTOGRAPHER

"California to Germany, Roundtrip" in January issue was good reading but who made the map showing San Mateo at the site of Hamilton Air Force Base, near San Raphael? An occasional shake out here scrambles the scenery slightly but never moves a city fifty miles.

JOHN H. SCHAEFER, M.D.
Los Angeles, Cal.

• *Truly the pen of the map maker is mightier than the California earthquake.* —ED.

### A LAD ON HIS WAY!

Answering Mr. Roosa in Feb. Mail Box . . . I claim aviation does have opportunities for teen agers. I'm a senior at Manhattan High School of Aviation Trades. We are taught engines and aircraft service, and work at it in our shop. I belong to CAP and while they don't teach me to fly, they do teach me much of basic importance and I do get orientation flights in our L-16. I am also a model airplane builder of flying scale, non-flying scale and stunt types, and have won some trophies. If all this does not constitute opportunity to develop a foundation for my career, I do not know what would.

FRED GILMAN
Flushing, N. Y.

### FINE SHADING

I was recently turned down for cadet flight training in the Air Force because considered partially color blind, although I passed all other exams with flying colors. I can clearly distinguish all basic colors but cannot define shades. So after five years service, the AF loses a career man. Meanwhile I keep up my civilian flying and upon my next discharge will continue flying as a civilian. I can't help but wonder how a condition of such fine shading can cost me a career in military flying and the Air Force a career pilot?

A/1C BRUCE K. NEWTON
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### FOR SALE

I have about 75 old aviation magazines dating in the late 20's and early 30's. Do you know any organization or person who might be interested in purchasing them?

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• *We feel for you. We have 175,000 brand new ones every month and want to know the same thing.*—ED.

### TAXES

According to your editorial, private flyers pay a 2¢ per-gallon Federal tax on gas, and various state gas taxes. If these sums went directly to benefit private flying it would provide much that has been lacking.

GILBERT STRAND
Seattle, Wash.

### PUBLIC'S PLANE

Basically the problem of developing private flying as a hobby boils down to economy and utility. In last December's FLYING, Donald Naughton and Ernest Seiler cited their views and experience on the Heath Parasol.

Could not this design be re-worked to conform to CAA requirements and put on the market by some enterprising manufacturer at low cost?

Until the public's plane, as distinguished from the pilot's plane, arrives, there will not be a great broadening of the base of private flying.

There are some bright spots on the horizon in the direction of the small helicopter but in this regard we can only wait and hope. Meanwhile something of

*(Continued on page 8)*

## tonight

This man could almost reach the moon tonight... for he stands at the brink of a new age in the conquest of space, and he knows this:

If we had to, we could get him there. Given time and urgent need, we could design, build and deliver the total solution to that problem.

An entirely new development in the aircraft industry now makes this possible. It is known as Systems Engineering... a science and a method of developing aircraft, guided missiles and electronic systems not as traditional flying vehicles but as fully coordinated solutions to operations problems.

Today, Martin Systems Engineering is already in full operation, tailoring airpower to tomorrow's needs. Most of the story is under wraps, but you should know this:

If our security requirements should demand the equivalent of an "Operations Moon," the principles of Martin Systems Engineering would be essential to the solution of that problem.

*You will hear more about Martin!*

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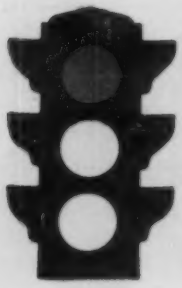

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Today's executives are turning to Bell helicopters to avoid surface traffic jams and save valuable hours in traveling from factory-to-factory, office-to-factory, factory-to-airport and for safe and quick trips to nearby communities.

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Port of New York Authority cut travel time for executive and engineering personnel from two hours on the ground to 20 minutes with a 3-place Bell helicopter; a New Jersey utility company developed a helicopter shuttle run between widely scattered installations; and an East Coast executive uses a helicopter exclusively for business trips in a radius of 100 miles of his headquarters.

Its low initial investment, simplified maintenance and economical operating cost—*plus built-in safety and efficiency*—makes the Bell helicopter a practical form of transportation for the busy executive.

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Texas Division, P. O. Box 482, Fort Worth 1, Texas


## MAIL BOX

*(Continued from page 6)*

the nature of the Heath Parasol could be the public's aircraft.

MAURICE V. GOWDEY
Albuquerque, N. M.

### THANKS OLD TIMER

To keep the records straight . . . in re Wesley Neal's recent article on America's First bomber.

The plane that went to Mexico was the World's first bomber! It was a Martin Curtiss, built by Glenn Martin at 10th and Santee Streets, Los Angeles. Didier Masson, who first came to the states as Louis Paulhan's mechanic, was second choice as pilot. We tried to get Larry Bell, then test pilot for Martin, but his family objected, so Masson was chosen.

Tommy Dean, my brother, had full charge of the plane from the time it was sold to Gen. Cabral of the Mexican Govt. until he left Sonora to take charge, not at Vera Cruz, but at Mexico City.

Our first bombs were not tin cans but 2½ in. pipe with dynamite caps to fire them. Only about 2 in 10 exploded on contact, so we tried match heads to fire the caps. A cap, not a bomb, went off and put both Tommy and me in the hospital. This happened in Hermicillo, Sonora, Mexico.

We did not sink the Gunboat, *Tampico*, in Guymas. The *Tampico* was sunk in Topolobanpo by the Federal Gunboat, *Genaro*. How we secured the *Tampico* was that she had been turned over to us after we scared her with near bomb misses flooding her with mud. The only boat we sank was the Federal, *Morales*, flagship of the fleet. We put a 70 lb. bomb behind her and washed her up on the beach at Isla Pedra across the bay from Mazatlan on the 4th of May, 1914. This was done by Gustavo Salinis, whom we trained as a pilot after Masson refused to fly with bombs.

JAMES M. DEAN
San Bruno, Cal.

### FOR AEROBATICS

At the present time I know of not one light plane on the market suitable for aerobatics. How about you?

Presently I am a "Stove Pipe Jockey," flying Uncle Sam's *Sabres*, but if and when I become a civilian again, I plan to own a light sport plane. Where will I find one without paying someone a fortune to build it? I'm referring to something like the *Pitt's Special* formerly owned by Betty Skelton. Over . . .

CHARLES PORTER
Lt., USAF
Parks AFB, Cal.

● *Suggest you contact Beverly Howard, Hawthorne Flying Service, Charleston, S. C., and "Steve" S. J. Wittman, Winnebago Co. Airport, Oshkosh, Wisc. We know of no light plane on the market specifically stressed for your purpose but "Bevo" and "Steve" will be able to tell you about modifications for aerobatics to existing light plane types.*—ED.

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| Lv. New York . . . . | 9:10 am | Lv. San Francisco . . | 11:55 pm |
| Ar. Dallas . . . . . | 1:05 pm | Ar. Dallas . . . . . | 6:30 am |
| Ar. San Francisco . . | 5:00 pm | Ar. New York . . . . | 12:15 pm |

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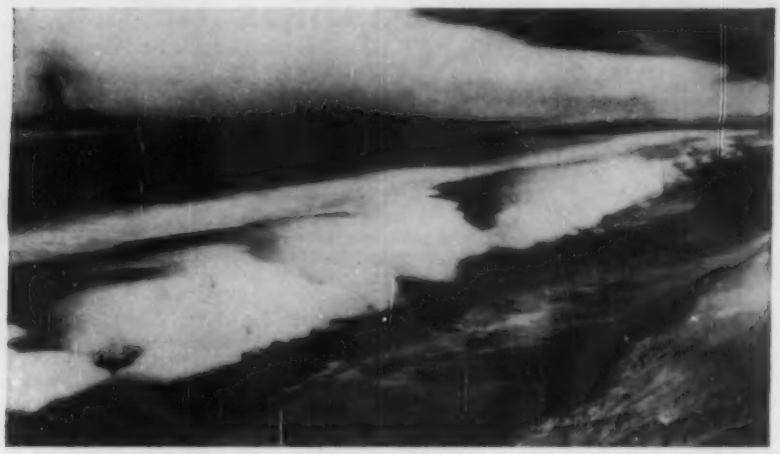
Typical "mountain wave" as seen from the ground. High mountains are at the right and wind flow is from right to left. Note the cap cloud hiding the mountain peaks at the extreme right and the rotor cloud in the lower center with lenticular clouds "fanning out" above.



The same mountain wave photographed from above, showing horizontal extent of rotor cloud and tops of this cloud merging with lowest lenticular layers, several of which can be seen to right of photo. Wind flow is from right to left. Mountain slopes appear at lower right.

Downdrafts striking the valley floor to the left of the mountain range, stirring up dust and carrying it up to the rotor cloud zone. The dust indicates how the wind flow clings to the surface and then rises sharply just in advance of the rotor cloud up to 30,000 feet.

*That beautiful*

*but dangerous phenomenon*

*the "Mountain Wave"*

*has proven to be*

# Nature's Booby Trap

*for unwary pilots.*

By LT. COMDR. WILLIAM J. KOTSCH, U.S.N.

Photograph taken on a day when there was extreme turbulence at high levels. The high lenticular clouds show very rough edges.

AS EARLY AS 1184 B.C., mankind was using the technique of the booby-trap, as evidenced by the Trojan Horse episode. But Mother Nature is a much older hand at the booby-trap, and one of her most interesting is currently termed the "mountain wave."

The expression "mountain wave" is applied by today's weathermen to the air flow over a mountain barrier. This phenomenon of nature presents a serious problem to aviation the world over, wherever the mountains of the lithosphere point skyward.

Whenever a strong wind blows almost perpendicular to a mountain range line, a wave-type circulation of air is set up in the earth's atmosphere to the leeward of the mountains. Violent updrafts and downdrafts to a magnitude of 5,000 feet per minute, severe turbulence, and gross altimetry errors combine to make this phenomenon a serious flying hazard. It is thought by some foremost investigators that present flight minima are entirely inadequate under these wave conditions, and that some serious past accidents attributed to pilot error were actually caused by a strong mountain wave.

The Circean aspect of the phenomenon is contributed by the typical and beautiful cloud formations associated with it, ranging from the cap (foehnwall) clouds which hug the tops of the mountains to the beautiful mother-of-pearl clouds usually found near an altitude of 80,000 feet.

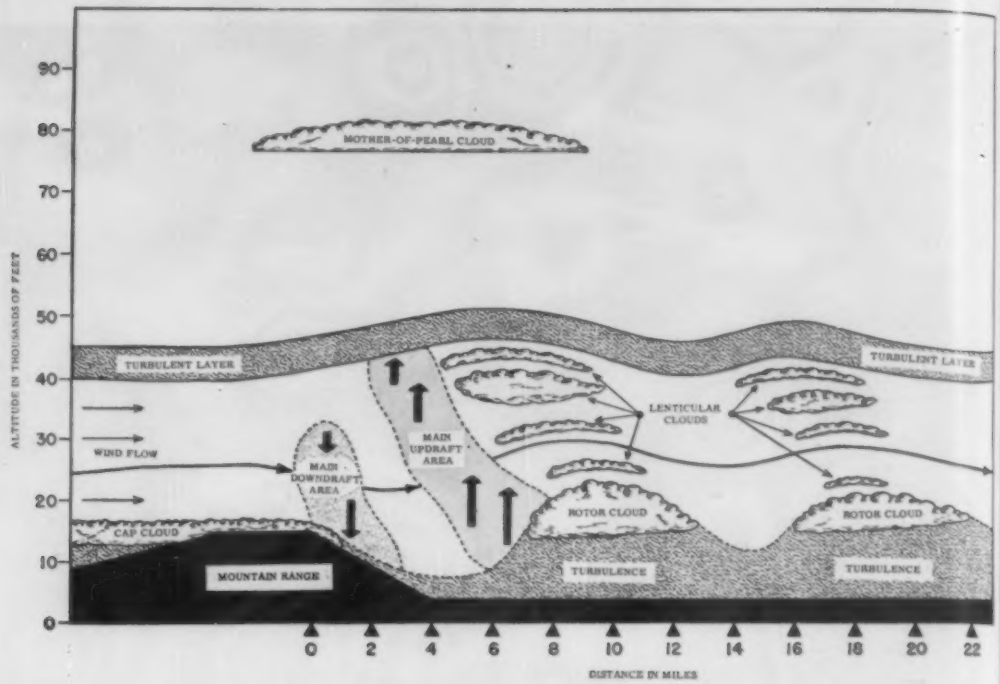
Overall dimensions of the mountain wave vary and are sometimes astonishingly large. In some cases, wave clouds extend several hundred miles parallel to the ridge lines. These clouds are clearly discernible at great distances and afford warning to personnel in approaching aircraft of the existence of dangerous wave conditions.

There may be only one wave crest or there may be several present at the same time, with the amplitudes and intensities decreasing in a downstream direction. Distance from the mountain peak to the first wave crest varies with the speed of the wind, the variation of wind with height, and the variation of temperature with height.

Associated with a typical mountain wave are four basic types of clouds: cap (foehnwall), rotor (roll), lenticular (lens-shaped), and mother-of-pearl.

One of the most dangerous of these is the cap cloud which conceals the mountain tops and cascades down the leeward side of the peaks where downdrafts are as high as 5,000 feet per minute! On the average, the thickness of this cloud is 1,500 to 4,000 feet.

The line of cumulus which parallels the ridge line has been termed the rotor cloud. This cloud forms on the leeward side of the range and frequently appears quite harmless. Such, however, is not the case, for the rotor cloud is a source of extreme turbulence with updrafts as high as 5,000 feet per minute on the leading edge and




Cross section showing a typical mountain wave.

downdrafts of equal magnitude on the trailing edge! A continuous "boiling" motion takes place in and below the cloud. Although creating the impression that it is stationary, the rotor cloud is constantly forming on the windward side and dissipating on the leeward side. The cloud base is usually below the level of the mountain peaks with its top sometimes extending to twice the height of the peaks. A thickness of 10,000 feet is not unusual. The rotor cloud may form immediately to the lee of the mountain or it may form as far as ten miles to leeward.

The smooth-appearing lenticular clouds are found at considerably higher altitudes and sometimes reach 40,000 feet. The tiered appearance of the lens-shaped clouds is indicative of the relatively smooth flow in this portion of the mountain wave. Similar to the rotor cloud, these are stationary, continually forming on the windward side and dissolving on the leeward side. Severe turbulence exists in the stratosphere above lenticular-type clouds. They usually tilt toward the mountain range, and as a result, the substantial increase in wind speed gives rise to local "jets" which produce flight hazard.

Far above earth's surface, in the stratosphere, the mother-of-pearl cloud forms at about 75,000 to 80,000 feet in polar regions during mountain wave conditions.

Although the overall appearance of the wave cloud structure creates the impression of a stationary phenomenon, there is constant motion and the clouds change shape, structure and position in a very short period of time. Extensive clouds form and dissolve in a matter of seconds.

Then, too, there are times when wind conditions are favorable for development of a mountain wave but the atmosphere is too dry to enable clouds to form. This cloudless or "dry wave" creates just as much severe turbulence, and the danger is increased because the visual "warning system" is absent.

The wind flow during a well developed mountain wave may be from 90 to 150 knots in the higher altitudes of the atmosphere. Over a mountain range like the Sierra Nevadas, during the winter season, an average of nine mountain waves per month may be expected, including perhaps two or three strong waves.

It is currently thought that *any* mountain range extending to 300 feet or higher can produce a mountain wave, and that over low mountains the effect of a wave can be felt up to a height 25 times that of the range. Wave effects associated with a 1,200-foot mountain are experienced to an altitude of 30,000 feet.

The intensity of the wave depends partly on the height of the mountain and its slope, as well as the strength of the wind flow. For the generation of a wave, the component of the wind perpendicular to the range must be at least 25 knots at mountain-top level. Actual wind direction can vary considerably and still cause a wave, but the most intense develop when the wind is strong and almost perpendicular to the range. The stronger the wind flow, the more severe the effects on the leeward side of the mountain.

In the western United States where this phenomenon has been most thoroughly observed and investigated, it has been noticed that the strongest waves form when a weather front approaches the mountains from the northwest or when a trough of low pressure at high altitudes approaches from the west. This produces a strong, perpendicular wind flow to the mountains which are oriented north-south. There is usually also a stable layer of air or an increase of temperature with height on the windward side of the range up to an altitude slightly above the peaks. The top of the stable layer of air is just above the cap cloud and descends to its lowest level at a point directly over the foot of the rotor cloud. Without this stable layer of air present, the wave pattern is destroyed by what the weathermen call "convective instability."

The most favorable wind condition for the existence of a wave is a wind speed exceeding 25 knots at mountain-top level. There must also be a rapid increase in wind speed with height in the level of the mountain range and for several thousand feet above, with a strong, steady wind flow up to the base of the stratosphere. And on the other hand, a *very* strong (*Continued on page 46*)

*A former instructor*

*on B-25's recalls a hair-raising experience*

*on a cross-country flight.*

# We Buzzed Pueblo

By JACK COX

WHEN TIME HAS MELLOWED the memories of a tight spot, we look back and laugh at the knot of fear. Those squeaks, which were not funny at the moment, always carry a humorous side when recalled; and to anyone willing to learn from experience, lessons that may add years and certainly wisdom.

In the spring of '44 the war was going full blast. Every man in every cadet class who could safely be graduated, finished the course. La Junta Air Base at that time was giving final instruction in B-25's. Most cadets had never flown anything larger than the old At-17, *Bobcat*. A few came direct to us from the BT "Vibrator."

On top of that, the passing winter at La Junta, Colo., had been a "bearcat." We flew but little for days at a time, and grounded B-25's squatted all over the place. As a result, the whole field flew practically day and night when at last the weather opened and planes were plentiful.

But the troubles of winter were behind me that day in the early spring as I left home base with two cadets to make a looping cross-country, on which we were to shoot a number of strange field landings.

And now Denver was slipping far behind the tail of our ship as we climbed for altitude along the edge of the Rockies. I sat back and relaxed. The landing at Denver had been a cinch. The cadet had approached the field carrying the required 2100 rpm, had set down on the early first third of the field and, when I adjusted flaps and increased rpm, he had eased home the power and the old "two-bits" had come off with a world of room to spare. Boy, this was the life! Flying the '25 was always a joy, but that day it was even better. The sky was like a painting above the heights of the snow-capped mountains. The pines below were a dark green tapestry against their bed of white; the heater worked; the cadet was above average; my stint of night flying was over for a month; and spring was here!

And so I dreamed as we clipped off a neat 210 until the smokestacks at Pueblo loomed on the horizon.

The field there was "municipal" with no control tower, but there was an airways station. We called Pueblo Radio, notified them we would shoot a touch-and-go landing, and asked about commercial traffic. Receiving a negative reply, the cadet picked out his runway and began his pattern. It became apparent that the wind was going to put us on the short runway heading towards town. I saw that a follow-through landing was out of the question.

But that was okay as we had plenty of time. It would give us opportunity to taxi around and show the civilians what an airplane we had. And while we didn't know it yet, brother, were we going to make an impression on two of them!

We were number one of three B-25's to come in, and number two entered the pattern while we were on the downwind leg. That cadet of mine was really on the ball. Making a perfect pattern, he slowed to the correct speed and called for "gear down." Down she went until, by looking out the window, we could each see a wheel. We nodded to each other, pointed a thumb to the ceiling and called, "I gotta gear." Booster pumps on, mixture full rich, and props forward to 2100. While we both knew the tanks were still almost full, my cadet leaned over and flipped the gas gauges around the dial to let me know we hadn't forgotten them. Airspeed okay, and altitude just right. I mentally relaxed. That boy was sharp.

The author when an Air Force Lieutenant.

As the left wing passed slightly ahead of the end of the runway, he eased back on the throttles and started his bank onto the base leg, setting up his rate-of-descent as he did so. It was after we had rolled level again that I first noticed a small lightplane taxiing from the hangars toward the intersection at the middle of the runway we were using. Since there was no control of any kind, I pointed out the plane to the cadet and cautioned him to keep an eye on it. When we rolled on to "final" the little plane was still taxiing toward our runway! The B-25 behind us in the pattern saw it about that time and gave me a call to "watch that bird down there, Cox."

I was beginning to wonder about it myself when I saw him come to a full stop, swing directly around broadside to us to clear himself and make certain the runway was clear. And he hadn't done it any too soon either, as he was practically on the active runway then.

Here my cadet made his only mistake of the day. In watching the plane on the ground, he had carried too much power and failed to lose enough altitude to put him on the end of the field. But, "so what?" We weren't going to shoot a follow-through anyway. He was all right. I would let him bring it in. We still had room to get her stopped, for we were coming in at the angle of a streamlined brick. Full flaps and throttles in our laps, cowl flaps cracked and both engines poppin' and crackin'. That cadet was going to get her on the ground or bust.

We came sailing over the end of the field, both engines chopped clear off, 45 degrees of flaps and airspeed just above stall- (*Continued on page* 42)

# MAIL BOX

### MACH?

Please explain the term Mach.

Parkersburg, W. Va. A. R. W.

• *A Mach number expresses the ratio of the true velocity of an airplane to the speed of sound. Since the speed of sound varies with density of the atmosphere, it therefore varies with altitude. Under standard atmospheric conditions, the speed of sound at sea level is approximately 760 mph but, for example, at 40,000 ft., under standard conditions, would be 100 miles less, or 660 mph.*

*High speed aircraft are equipped with an instrument known as a Mach Meter. It combines an airspeed mechanism with an altimeter mechanism and informs the airman of his speed relative to the speed of sound at varying altitudes.*—ED.

### SALTON SEA FOREVER

Lt. Comdr. Verdin set his speed record in the Douglas F4D *Skyray* at 753.4 mph over the Salton Sea speed course and not over Edwards AFB at Muroc. We here in Coachella Valley are proud that Salton Sea was picked during the hot weather for this 3-kilometer course.

Both North American and Douglas keep their aircraft at El Centro Naval Base during these speed runs. Thermal Air Base, nearest to the Salton Sea speed course, is headquarters for personnel covering the speed runs and is an exciting spot. We at Thermal have been happy to find a good use for the airport during summer heat when most people shun the desert.

This oasis in the desert is rapidly becoming an aviation center. Come see us!

ELEANOR WAGNER
Coachella Valley Air Service
Thermal, Cal.

### GLAD TO OBLIGE

Many thanks for printing a Mail Box letter in Jan. issue headed Cadet Qualifications. And thanks to Messrs. Jones, Stock, Bergey and Holleman for their views. They give me renewed hope to become an Air Force cadet.

JOHN C. MILLER
Zanesville, Ohio

Just want you to know that FLYING is of great interest to a prospective flyer. It is wonderful to find writing that makes so much sense. Boy, it's appreciated.

F. GEBHARDT
Cleveland, Ohio

I am a long time subscriber to FLYING and have found it of great help to my flying career during my stay in the United States. Might I mention that in a recent issue I noted that a prop installed on a Wright R-3350 was a Curtiss Electric rather than a Hamilton Standard Hydromatic.

EDWIN REES
San Jose, Costa Rica

### HUNGRY AIRMEN ATTENTION!

I claim that Heron Field, one mile east of Blythe, Cal., holds a world record for eating and sleeping accommodations . . . within five minutes walk, 4 wonderful restaurants and 15 motels, including 5 swimming pools!

DONALD KAEGI
Blythe, Cal.

### OLD FAITHFUL

I noted that one recent issue of FLYING omitted the regular feature, "I Learned About Flying From That." This feature is very valuable. Hope you are not dropping it.

HOWARD MANGOLD

• *Have no fears.*—ED.

### WHEN CROWS WALK

This icing developed on the prop of my *Cub* while turning up for 10 minutes at 1200 rpm in foggy weather slightly above freezing. When I shut off the engine the ice soon melted and fell off. Repeated experiments produced same results.

Edgewood, Md. GEORGE E. THOMPSON

### MIGHTY CARTOGRAPHER

"California to Germany, Roundtrip" in January issue was good reading but who made the map showing San Mateo at the site of Hamilton Air Force Base, near San Raphael? An occasional shake out here scrambles the scenery slightly but never moves a city fifty miles.

JOHN H. SCHAEFER, M.D.
Los Angeles, Cal.

• *Truly the pen of the map maker is mightier than the California earthquake.*
—ED.

### A LAD ON HIS WAY!

Answering Mr. Roosa in Feb. Mail Box . . . I claim aviation does have opportunities for teen agers. I'm a senior at Manhattan High School of Aviation Trades. We are taught engines and aircraft service, and work at it in our shop. I belong to CAP and while they don't teach me to fly, they do teach me much of basic importance and I do get orientation flights in our L-16. I am also a model airplane builder of flying scale, non-flying scale and stunt types, and have won some trophies. If all this does not constitute opportunity to develop a foundation for my career, I do not know what would.

FRED GILMAN
Flushing, N. Y.

### FINE SHADING

I was recently turned down for cadet flight training in the Air Force because considered partially color blind, although I passed all other exams with flying colors. I can clearly distinguish all basic colors but cannot define shades. So after five years service, the AF loses a career man. Meanwhile I keep up my civilian flying and upon my next discharge will continue flying as a civilian. I can't help but wonder how a condition of such fine shading can cost me a career in military flying and the Air Force a career pilot?

A/1C BRUCE K. NEWTON
Jet Fighter C w Chief
331 Fighter—Interceptor Sqdn.

### FOR SALE

I have about 75 old aviation magazines dating in the late 20's and early 30's. Do you know any organization or person who might be interested in purchasing them?

LINWOOD J. NICHOLS
20 Lincoln Ave.
Saratoga Springs, N. Y.

• *We feel for you. We have 175,000 brand new ones every month and want to know the same thing.*—ED.

### TAXES

According to your editorial, private flyers pay a 2¢ per-gallon Federal tax on gas, and various state gas taxes. If these sums went directly to benefit private flying it would provide much that has been lacking.

GILBERT STRAND
Seattle, Wash.

### PUBLIC'S PLANE

Basically the problem of developing private flying as a hobby boils down to economy and utility. In last December's FLYING, Donald Naughton and Ernest Seiler cited their views and experience on the Heath Parasol.

Could not this design be re-worked to conform to CAA requirements and put on the market by some enterprising manufacturer at low cost?

Until the public's plane, as distinguished from the pilot's plane, arrives, there will not be a great broadening of the base of private flying.

There are some bright spots on the horizon in the direction of the small helicopter but in this regard we can only wait and hope. Meanwhile something of

*(Continued on page 8)*

## tonight

This man could almost reach the moon tonight... for he stands at the brink of a new age in the conquest of space, and he knows this:

If we had to, we could get him there. Given time and urgent need, we could design, build and deliver the total solution to that problem.

An entirely new development in the aircraft industry now makes this possible. It is known as Systems Engineering... a science and a method of developing aircraft, guided missiles and electronic systems not as traditional flying vehicles but as fully coordinated solutions to operations problems.

Today, Martin Systems Engineering is already in full operation, tailoring airpower to tomorrow's needs. Most of the story is under wraps, but you should know this:

If our security requirements should demand the equivalent of an "Operations Moon," the principles of Martin Systems Engineering would be essential to the solution of that problem.

*You will hear more about Martin!*

Martin AIRCRAFT

THE GLENN L. MARTIN COMPANY
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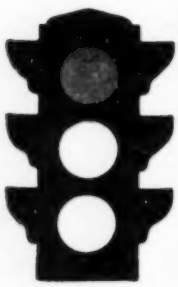

# don't let Traffic tie-up your executives

There's an easy solution...
Today's executives are turning to Bell helicopters to avoid surface traffic jams and save valuable hours in traveling from factory-to-factory, office-to-factory, factory-to-airport and for safe and quick trips to nearby communities.

One company estimated that executive time lost in just traveling from factory to airport reached *$1,000 a day.* A Bell helicopter not only can save that important time but also doubles as an all-around aerial messenger, hustling high priority mail and material from facility to facility.

Port of New York Authority cut travel time for executive and engineering personnel from two hours on the ground to 20 minutes with a 3-place Bell helicopter; a New Jersey utility company developed a helicopter shuttle run between widely scattered installations; and an East Coast executive uses a helicopter exclusively for business trips in a radius of 100 miles of his headquarters.

Its low initial investment, simplified maintenance and economical operating cost—*plus built-in safety and efficiency*—makes the Bell helicopter a practical form of transportation for the busy executive.

The Bell Model 47 helicopter has been thoroughly proven by more than a million hours of operation in the United States and 30 foreign countries. It is a product of the world's largest manufacturer of commercial helicopters—Bell Aircraft.

Write for complete details:

BELL *Aircraft* CORPORATION
Texas Division, P. O. Box 482, Fort Worth 1, Texas


## MAIL BOX

(Continued from page 6)

the nature of the Heath Parasol could be the public's aircraft.

MAURICE V. GOWDEY
Albuquerque, N. M.

### THANKS OLD TIMER

To keep the records straight . . . in re Wesley Neal's recent article on America's First bomber.

The plane that went to Mexico was the World's first bomber! It was a Martin Curtiss, built by Glenn Martin at 10th and Santee Streets, Los Angeles. Didier Masson, who first came to the states as Louis Paulhan's mechanic, was second choice as pilot. We tried to get Larry Bell, then test pilot for Martin, but his family objected, so Masson was chosen.

Tommy Dean, my brother, had full charge of the plane from the time it was sold to Gen Cabral of the Mexican Govt. until he left Sonora to take charge, not at Vera Cruz, but at Mexico City.

Our first bombs were not tin cans but 2½ in. pipe with dynamite caps to fire them. Only about 2 in 10 exploded on contact, so we tried match heads to fire the caps. A cap, not a bomb, went off and put both Tommy and me in the hospital. This happened in Hermicillo, Sonora, Mexico.

We did not sink the Gunboat, *Tampico*, in Guymas. The *Tampico* was sunk in Topolobanpo by the Federal Gunboat, *Genaro*. How we secured the *Tampico* was that she had been turned over to us after we scared her with near bomb misses flooding her with mud. The only boat we sank was the Federal, *Morales*, flagship of the fleet. We put a 70 lb. bomb behind her and washed her up on the beach at Isla Pedra across the bay from Mazatlan on the 4th of May, 1914. This was done by Gustavo Salinis, whom we trained as a pilot after Masson refused to fly with bombs.

JAMES M. DEAN
San Bruno, Cal.

### FOR AEROBATICS

At the present time I know of not one light plane on the market suitable for aerobatics. How about you?

Presently I am a "Stove Pipe Jockey," flying Uncle Sam's *Sabres*, but if and when I become a civilian again, I plan to own a light sport plane. Where will I find one without paying someone a fortune to build it? I'm referring to something like the *Pitt's Special* formerly owned by Betty Skelton. Over . . .

CHARLES PORTER
Lt., USAF
Parks AFB, Cal.

• *Suggest you contact Beverly Howard, Hawthorne Flying Service, Charleston, S. C., and "Steve" S. J. Wittman, Winnebago Co. Airport, Oshkosh, Wisc. We know of no light plane on the market specifically stressed for your purpose but "Bevo" and "Steve" will be able to tell you about modifications for aerobatics to existing light plane types.*—ED.

*First carrier-based airplane*

*to hold a world's speed record*

753.4 m.p.h.

*the U.S. Navy's*

# Douglas F4D Skyray

Streaking each mile in *less* than 5 seconds, during four passes at a 3-kilometer course, a Douglas F4D Skyray returned the official world speed record to the United States.

Two weeks later, Skyray blazed into a 100-kilometer course, cracked all records by an even wider margin. Now in production for the Navy, this delta wing jet interceptor adds terrific climb and firepower to its speed—plus the ease of handling needed in carrier landings. The Douglas F4D Skyray has now passed its initial carrier tests, in service will guard our fleets against the fastest of modern jet bombers.

Performance of the Navy's F4D Skyray is another example of Douglas leadership in aviation. Faster and farther with a bigger payload is always the basic rule of Douglas design.

*Be a Naval Aviator—*
*write Nav. Cad.*
*Washington 25, D.C.*

**Depend on *DOUGLAS*** **First in Aviation**

FLYING
VOLUME 54, NO. 4
APRIL, 1954

WILLIAM B. ZIFF, 1898 - 1953, FOUNDER OF FLYING MAGAZINE

# Muster

*WHAT SHALL WE SAY of each in turn*
*When the travail of each is done . . .*
*These men of the bold fraternity*
*Who held they could touch the sun,*
*This breed which lifted its face aloft,*
*This clan of the high frontier . . .*
*Oh, what shall we say at the end of day*
*When we muster the pioneer?*

*How shall we rate them one by one*
*As the final approach is made . . .*
*These sons whose faith was the common bond*
*In the varied parts they played?*
*Shall we check each out with epitaph*
*As the props turn low and cease,*
*Or leave them knit as their faith was knit*
*As they park in eternal peace?*

*Let them who will in time to come*
*Judge who was the great or small:*
*But we who walked on the sky with them*
*Can only be judge of all,*
*For the glory is not that one by one*
*Each carved for himself career*
*But that none lost faith while he drew a breath*
*In his trek to the high frontier.*

*G.R.W.*

## AMERICAN Introduces

# Fastest service between New York and San Francisco

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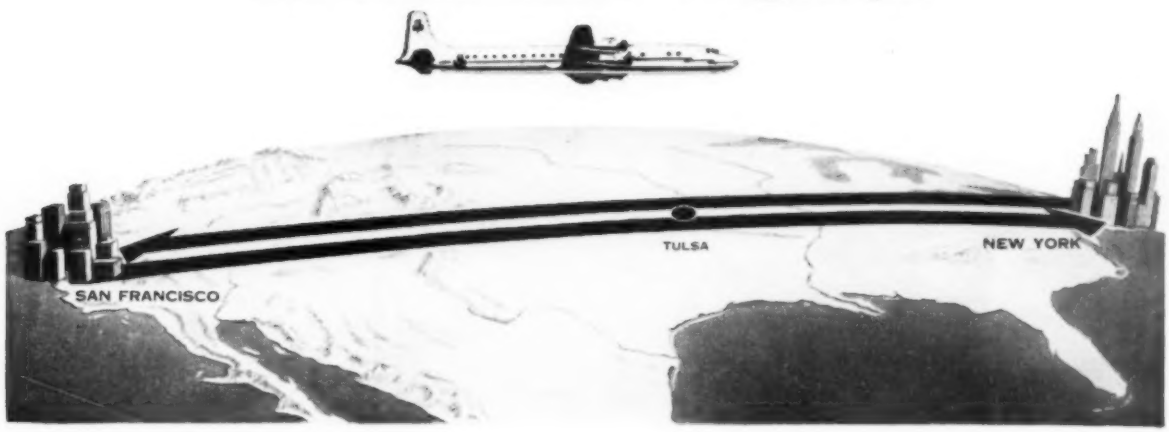


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| Ar. Tulsa . . . . . | 3:50 pm | Ar. Tulsa . . . . . | 3:30 pm |
| Ar. San Francisco . . | 7:40 pm | Ar. New York . . . . | 8:40 pm |
| the **SOUTHERNER** Flight | | the **SOUTHERNER** Flight | |
| Lv. New York . . . . | 9:10 am | Lv. San Francisco . . | 11:55 pm |
| Ar. Dallas . . . . . | 1:05 pm | Ar. Dallas . . . . . | 6:30 am |
| Ar. San Francisco . . | 5:00 pm | Ar. New York . . . . | 12:15 pm |

**AMERICAN AIRLINES INC.**

*America's Leading Airline*

Typical "mountain wave" as seen from the ground. High mountains are at the right and wind flow is from right to left. Note the cap cloud hiding the mountain peaks at the extreme right and the rotor cloud in the lower center with lenticular clouds "fanning out" above.

The same mountain wave photographed from above, showing horizontal extent of rotor cloud and tops of this cloud merging with lowest lenticular layers, several of which can be seen to right of photo. Wind flow is from right to left. Mountain slopes appear at lower right.

Downdrafts striking the valley floor to the left of the mountain range, stirring up dust and carrying it up to the rotor cloud zone. The dust indicates how the wind flow clings to the surface and then rises sharply just in advance of the rotor cloud up to 30,000 feet.

*That beautiful*

*but dangerous phenomenon*

*the "Mountain Wave"*

*has proven to be*

# Nature's Booby Trap

*for unwary pilots.*

By LT. COMDR. WILLIAM J. KOTSCH, U.S.N.

Photograph taken on a day when there was extreme turbulence at high levels. The high lenticular clouds show very rough edges.

AS EARLY AS 1184 B.C., mankind was using the technique of the booby-trap, as evidenced by the Trojan Horse episode. But Mother Nature is a much older hand at the booby-trap, and one of her most interesting is currently termed the "mountain wave."

The expression "mountain wave" is applied by today's weathermen to the air flow over a mountain barrier. This phenomenon of nature presents a serious problem to aviation the world over, wherever the mountains of the lithosphere point skyward.

Whenever a strong wind blows almost perpendicular to a mountain range line, a wave-type circulation of air is set up in the earth's atmosphere to the leeward of the mountains. Violent updrafts and downdrafts to a magnitude of 5,000 feet per minute, severe turbulence, and gross altimetry errors combine to make this phenomenon a serious flying hazard. It is thought by some foremost investigators that present flight minima are entirely inadequate under these wave conditions, and that some serious past accidents attributed to pilot error were actually caused by a strong mountain wave.

The Circean aspect of the phenomenon is contributed by the typical and beautiful cloud formations associated with it, ranging from the cap (foehnwall) clouds which hug the tops of the mountains to the beautiful mother-of-pearl clouds usually found near an altitude of 80,000 feet.

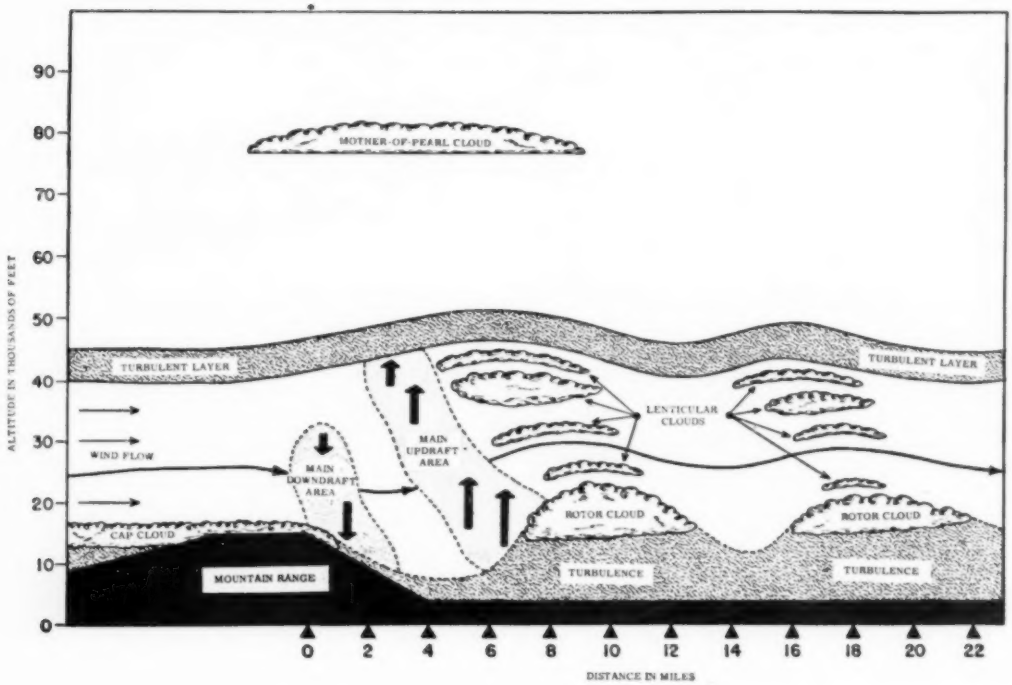
Overall dimensions of the mountain wave vary and are sometimes astonishingly large. In some cases, wave clouds extend several hundred miles parallel to the ridge lines. These clouds are clearly discernible at great distances and afford warning to personnel in approaching aircraft of the existence of dangerous wave conditions.

There may be only one wave crest or there may be several present at the same time, with the amplitudes and intensities decreasing in a downstream direction. Distance from the mountain peak to the first wave crest varies with the speed of the wind, the variation of wind with height, and the variation of temperature with height.

Associated with a typical mountain wave are four basic types of clouds: cap (foehnwall), rotor (roll), lenticular (lens-shaped), and mother-of-pearl.

One of the most dangerous of these is the cap cloud which conceals the mountain tops and cascades down the leeward side of the peaks where downdrafts are as high as 5,000 feet per minute! On the average, the thickness of this cloud is 1,500 to 4,000 feet.

The line of cumulus which parallels the ridge line has been termed the rotor cloud. This cloud forms on the leeward side of the range and frequently appears quite harmless. Such, however, is not the case, for the rotor cloud is a source of extreme turbulence with updrafts as high as 5,000 feet per minute on the leading edge and




Cross section showing a typical mountain wave.

downdrafts of equal magnitude on the trailing edge! A continuous "boiling" motion takes place in and below the cloud. Although creating the impression that it is stationary, the rotor cloud is constantly forming on the windward side and dissipating on the leeward side. The cloud base is usually below the level of the mountain peaks with its top sometimes extending to twice the height of the peaks. A thickness of 10,000 feet is not unusual. The rotor cloud may form immediately to the lee of the mountain or it may form as far as ten miles to leeward.

The smooth-appearing lenticular clouds are found at considerably higher altitudes and sometimes reach 40,000 feet. The tiered appearance of the lens-shaped clouds is indicative of the relatively smooth flow in this portion of the mountain wave. Similar to the rotor cloud, these are stationary, continually forming on the windward side and dissolving on the leeward side. Severe turbulence exists in the stratosphere above lenticular-type clouds. They usually tilt toward the mountain range, and as a result, the substantial increase in wind speed gives rise to local "jets" which produce flight hazard.

Far above earth's surface, in the stratosphere, the mother-of-pearl cloud forms at about 75,000 to 80,000 feet in polar regions during mountain wave conditions.

Although the overall appearance of the wave cloud structure creates the impression of a stationary phenomenon, there is constant motion and the clouds change shape, structure and position in a very short period of time. Extensive clouds form and dissolve in a matter of seconds.

Then, too, there are times when wind conditions are favorable for development of a mountain wave but the atmosphere is too dry to enable clouds to form. This cloudless or "dry wave" creates just as much severe turbulence, and the danger is increased because the visual "warning system" is absent.

The wind flow during a well developed mountain wave may be from 90 to 150 knots in the higher altitudes of the atmosphere. Over a mountain range like the Sierra Nevadas, during the winter season, an average of nine mountain waves per month may be expected, including perhaps two or three strong waves.

It is currently thought that *any* mountain range extending to 300 feet or higher can produce a mountain wave, and that over low mountains the effect of a wave can be felt up to a height 25 times that of the range. Wave effects associated with a 1,200-foot mountain are experienced to an altitude of 30,000 feet.

The intensity of the wave depends partly on the height of the mountain and its slope, as well as the strength of the wind flow. For the generation of a wave, the component of the wind perpendicular to the range must be at least 25 knots at mountain-top level. Actual wind direction can vary considerably and still cause a wave, but the most intense develop when the wind is strong and almost perpendicular to the range. The stronger the wind flow, the more severe the effects on the leeward side of the mountain.

In the western United States where this phenomenon has been most thoroughly observed and investigated, it has been noticed that the strongest waves form when a weather front approaches the mountains from the northwest or when a trough of low pressure at high altitudes approaches from the west. This produces a strong, perpendicular wind flow to the mountains which are oriented north-south. There is usually also a stable layer of air or an increase of temperature with height on the windward side of the range up to an altitude slightly above the peaks. The top of the stable layer of air is just above the cap cloud and descends to its lowest level at a point directly over the foot of the rotor cloud. Without this stable layer of air present, the wave pattern is destroyed by what the weathermen call "convective instability."

The most favorable wind condition for the existence of a wave is a wind speed exceeding 25 knots at mountain-top level. There must also be a rapid increase in wind speed with height in the level of the mountain range and for several thousand feet above, with a strong, steady wind flow up to the base of the stratosphere. And on the other hand, a *very* strong (*Continued on page* 46)

*A former instructor*

*on B-25's recalls a hair-raising experience*

*on a cross-country flight.*

# We Buzzed Pueblo

By JACK COX

WHEN TIME HAS MELLOWED the memories of a tight spot, we look back and laugh at the knot of fear. Those squeaks, which were not funny at the moment, always carry a humorous side when recalled; and to anyone willing to learn from experience, lessons that may add years and certainly wisdom.

In the spring of '44 the war was going full blast. Every man in every cadet class who could safely be graduated, finished the course. La Junta Air Base at that time was giving final instruction in B-25's. Most cadets had never flown anything larger than the old At-17, *Bobcat*. A few came direct to us from the BT "Vibrator."

On top of that, the passing winter at La Junta, Colo., had been a "bearcat." We flew but little for days at a time, and grounded B-25's squatted all over the place. As a result, the whole field flew practically day and night when at last the weather opened and planes were plentiful.

But the troubles of winter were behind me that day in the early spring as I left home base with two cadets to make a looping cross-country, on which we were to shoot a number of strange field landings.

And now Denver was slipping far behind the tail of our ship as we climbed for altitude along the edge of the Rockies. I sat back and relaxed. The landing at Denver had been a cinch. The cadet had approached the field carrying the required 2100 rpm, had set down on the early first third of the field and, when I adjusted flaps and increased rpm, he had eased home the power and the old "two-bits" had come off with a world of room to spare. Boy, this was the life! Flying the '25 was always a joy, but that day it was even better. The sky was like a painting above the heights of the snow-capped mountains. The pines below were a dark green tapestry against their bed of white; the heater worked; the cadet was above average; my stint of night flying was over for a month; and spring was here!

And so I dreamed as we clipped off a neat 210 until the smokestacks at Pueblo loomed on the horizon.

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But that was okay as we had plenty of time. It would give us opportunity to taxi around and show the civilians what an airplane we had: And while we didn't know it yet, brother, were we going to make an impression on two of them!

We were number one of three B-25's to come in, and number two entered the pattern while we were on the downwind leg. That cadet of mine was really on the ball. Making a perfect pattern, he slowed to the correct speed and called for "gear down." Down she went until, by looking out the window, we could each see a wheel. We nodded to each other, pointed a thumb to the ceiling and called, "I gotta gear." Booster pumps on, mixture full rich, and props forward to 2100. While we both knew the tanks were still almost full, my cadet leaned over and flipped the gas gauges around the dial to let me know we hadn't forgotten them. Airspeed okay, and altitude just right. I mentally relaxed. That boy was sharp.

The author when an Air Force Lieutenant.

As the left wing passed slightly ahead of the end of the runway, he eased back on the throttles and started his bank onto the base leg, setting up his rate-of-descent as he did so. It was after we had rolled level again that I first noticed a small lightplane taxiing from the hangars toward the intersection at the middle of the runway we were using. Since there was no control of any kind, I pointed out the plane to the cadet and cautioned him to keep an eye on it. When we rolled on to "final" the little plane was still taxiing toward our runway! The B-25 behind us in the pattern saw it about that time and gave me a call to "watch that bird down there, Cox."

I was beginning to wonder about it myself when I saw him come to a full stop, swing directly around broadside to us to clear himself and make certain the runway was clear. And he hadn't done it any too soon either, as he was practically on the active runway then.

Here my cadet made his only mistake of the day. In watching the plane on the ground, he had carried too much power and failed to lose enough altitude to put him on the end of the field. But, "so what?" We weren't going to shoot a follow-through anyway. He was all right. I would let him bring it in. We still had room to get her stopped, for we were coming in at the angle of a streamlined brick. Full flaps and throttles in our laps, cowl flaps cracked and both engines poppin' and crackin'. That cadet was going to get her on the ground or bust.

We came sailing over the end of the field, both engines chopped clear off, 45 degrees of flaps and airspeed just above stall- (*Continued on page* 42)

The tip of the airstrip showing between the two main hills of Yo-do. *Inset* shows exposed Briscoe Field running entirely across the island. It was distinguished from other strips by its openness to enemy fire.

*A tiny island on the east coast of North Korea saved many a disabled aircraft.*

# Mayday Yo-do!

By LT. CMDR. JOHN M. PARSONS, USNR

THE NIGHT OF JULY 27, '53, "K"-Day, the men of Yo-do lit cigarettes in the open, but by habit peered toward the near hills where lay Communist gun positions.

Since early 1951, the island had seen no peace from Communist artillery because Yo-do is directly in the center of an enemy harbor and holds a valuable airfield.

It seems preposterous that U.N. forces would ever consider holding Yo-do, until you know its recent history.

Yo-do lies in the semi-circular entrance to the bay of Wonsan, the big industrial city on North Korea's east coast, whose great logistic importance subjected it to almost daily strikes by the heavy guns of the U.S. Seventh Fleet and the carrier planes of Task Force 77. The siege of Wonsan was the longest in American naval history . . . two years, four months and eleven days.

The city dominates a narrow coastal shelf some 50 miles north of the main battle line of the last two years. One of the two vital Communist supply routes to the front wound down through narrow mountain passes to touch the coast at Wonsan. Then the road fled back into the razorback hills, where it was safe from Navy's big guns.

The Fleet was primarily after the supply line, forced to skirt the coast at Wonsan. The city, which the Japanese once called "The Chicago of Korea," had been virtually reduced to rubble early in the war.

But the Communists never relinquished their hold on that supply line. After daily air attack and ship bombardment pocked the roads, cut the rails, obliterated

A group of ROK Marines, completely outfitted in USMC fatigues except for canvas footwear, on Yo-do Island.

The helicopter landing area on the sheltered side of the outermost hill on Yo-do. U.S. Marines' command post is at top of photo; ROK Marines' in foreground.

makeshift bridges, and destroyed convoys, the Reds issued from their caves in thousands by night and made their supply route again functional.

The deep, inter-connected caves in the hills overhanging Wonsan were never made fully untenable for the Communists' big guns. Always they were able to muster return fire from heavy artillery out of cave mouths. More than 30 U.S. ships were hit during the long action at Wonsan.

U.S. troops had held fast to Yo-do when the Red horde swept out of China and drove the allies back from the Yalu in the winter of 1950-51, into South Korea. Yo-do was valuable as a forward observation post for the Fleet offshore and the U.N. troops and Air Force to the south. From their island, the garrison could watch enemy activity around Wonsan and guide the strikes of planes and guns.

Not only was Yo-do held, but reinforced, and men were sneaked to four tiny islands still closer inshore, one a rock scarcely 3,000 yards from the beach. Only one friendly island, Tae-do, was not manned; it contained a colony of 170 lepers.

The outer bay, of which Wonsan's main harbor is a part, was a landmark for our planes flying the North Korean east coast to and from their targets. Up to the summer of 1952, more than 200 U.N. aircraft were estimated to have ditched in Wonsan harbor—unable to make it home.

Yo-do, roughly fan-shaped, (*Continued on page 40*)

Members of a Navy helicopter unit based on LST which stood by constantly for rescue work. Left to right: Airman F. Mariles, Aircraft Mechanic third class T. R. Smith and Lt. Comdr. Don Good, the pilot.

"... the boys would sit outside the bunkhouse ... and tell lies."

# BUNKHOUSE BALLAD

By
EUGENE R. WILLIAMS

"An unsmiling man in a greasy cook's apron . . ."

IN THE SPRING of '49 I headed over into Arizona in a Porterfield I had picked up in Long Beach for $495. It didn't look like much and it leaked considerable oil, but it cruised on the hot side of 90 and climbed at a remarkable angle. It was a simple airplane, and I like my flying simple. We were two of a kind and got along well together.

I had been out of the Air Force almost three years, but I kept getting the urge to sling my barracks bag over my shoulder and take off for distant horizons. Now, as I headed east, I had nothing definite in mind except to spend a few months doing as I pleased. In the baggage compartment was a five gallon jeep can of gas for the long hauls. A sleeping bag and a B-4 bag with my extra clothing and some canned food in it were lashed down in the back seat.

I made an RON stop at Phoenix and went on to Tucson the next morning. It was a nice time of the year down there and I considered going on into Mexico, but decided against it and turned the Port's little yellow nose northeast. That night I stopped at an abandoned strip near

". . . come on in and eat with the boys."

Clifton and tried to sleep in my sleeping bag, but it was too cold. I found some wood, built a fire, and sat there till it was light enough to fly.

Two hours after I took off, my wire and cork fuel gauge was down to one inch. I had already emptied the jeep can at Clifton. I spotted a ranch with a little level spot behind the cattle pens and bumped the Port down.

An unsmiling man in a greasy cook's apron was standing in the doorway of a nearby shack. I walked over and asked if he had any gasoline. He didn't reckon he did, but if I wanted some breakfast to come on in and eat with the boys. Curious as well as hungry, I went inside. Sure enough, the boys were real cowboys.

"Howdy, Buzz," said a tall homely man, extending his hand. "Yore jest in time fer breakfast." Then he introduced me to the crew. There was Big Oak and Little Oak, both from Oklahoma, and two Indians, Sears and Roebuck. A kid from Sweetwater, Tex., was called Sweetwater, and the cook's name was Montgomery. I later learned it was not his name but where he was from. The tall homely man was the foreman. His name was Ramrod. I was Buzz.

After breakfast I asked Ramrod about gasoline. He

could have told me they had some, but I was a dude and he had to impress me.

"The Ol' Man's got a A-model truck," he drawled. "An' he's got a bar'l of somethin' down by the house. Might jest be gas. Then again it might be whiskey. Ol' cuss has a mighty big thirst."

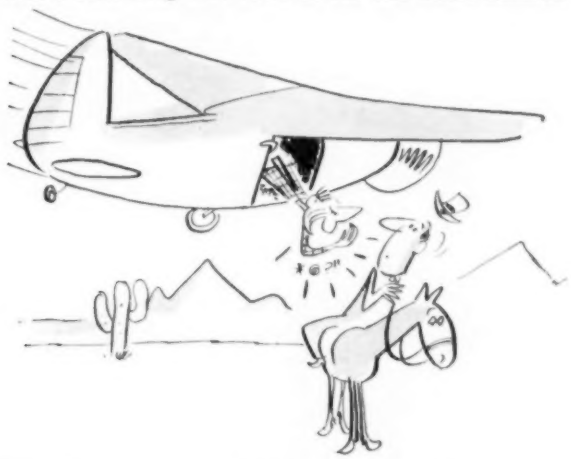
We started walking down to the house a quarter of a mile away, and I started thinking. I liked this place and I would like to stay. I had never been on a horse, but it looked to me as though a plane would be very handy on a ranch. I'll bet I could even round up cattle with it. I sounded Ramrod out on the idea, but he said the Ol' Man was kind of ornery about such things as new fangled contraptions and he doubted it.

At the house I met Mistah La Force, the Ol' Man, who must have been 98 years old and weighed about the same soaking wet. He was wearing an honest to Pete revolver and appeared just about mean enough to use it.

It took till lunch time to wear the Ol' Man down and be put on the payroll. He would only give me fifty a month and board 'cause I didn't know a —— ——— thing about cattle. He came up to a buck and a quarter an hour for the airplane. I protested that I was losing money, but I accepted the offer. He also promised to bring me a bar'l of airplane gas next time he went to town. Till then I could blame well use auto gas, and don't forget to pay for it.

When I left the Ol' Man I felt as though I had put over a big deal. The pay was too low for any kind of flying, but having never been one to look at the price tag on anything I do just for the heck of it, I think I would have taken the job for no pay.

The bunkhouse was a small brother of a G. I. barracks with a First Sergeant's room at one end where Ramrod



**"He wanted me to fly over the camp so he could tell something to Ramrod."**

slept. I unrolled my sleeping bag on a top bunk, hung my B-4 bag on a nail, and made myself at home.

On warm nights the boys would sit outside the bunkhouse on some coke cases and tell lies. When the nights were cool they would sit inside and tell lies. Nine o'clock was sack time because we were up at dawn every morning. I didn't have a horse to fool around with as the others did, so I would go out and preflight the Port, awakening anyone who thought he could sleep late.

There were no women on the ranch, and because of the language the Ol' Man used, it was a good thing there weren't. It was often hard to follow the thread of the conversation through the adjectives he used to illustrate it. Although he had lived in Arizona for 51 years, he was still a Texan and had gunned down more men than Billy the Kid. He had left Texas one jump ahead of the sheriff, and could still, at his age, outdraw any Texas Ranger. He told his lies up at the main house.

**"I tried to sleep in my sleeping bag, but it was too cold."**

"Come heah, Buzz," he said one day. "I'll learn you how to shoot." I said I thought I'd never want to shoot anybody and not to bother. He learned me how to shoot anyway.

At first my job was to spot cattle that had strayed from the various herds, fly back to the ranch and tell Ramrod where they were. I took the door off the Port so I could just fly over a cowboy, lean out, and yell at him. This saved considerable time.

Another chore was checking the fences twice a week. I never found anything wrong with them, but the Ol' Man suspected his next door neighbor 20 miles away of stealing any fat steer that ventured too close to the property line. The neighbor's name was Soup Watson because he was once a soup-ten-it on the Santa Fe.

One morning right after breakfast the Ol' Man came down to the pens and announced that he was going with me to see what in tarnation he was paying me fifty dollars a month for. I put him in the back seat, but he objected to the safety belt. It interfered with his shootin' iron. I said he wouldn't be doing any shooting in my plane, and strapped him in anyway. As I took off I decided to give him his money's worth. I spotted one rider close to the ranch trying in vain to keep a large herd together. I made a circle around it and all the stray cattle scampered back into the herd. The Ol' Man liked that. Next we took a run along Soup Watson's fence line. All the stock near the fence took off for the interior (*Continued on page* 52)

**"The Ol' Man had fallen . . . right on the canvas cover of the wagon."**

Landing on a 10 x 12 ft. heliport, 'copter brings men and supplies to construction gang's camp.

**THE AIR AGE AT WORK**

*This is the tenth in a continuing series illustrating aircraft at work.*

# TOEHOLD ON A

Two mountain-hopping whirlibirds come down on a remote heliport of their own making in the Canadian wilderness.

By TERRY KAY

# MOUNTAIN

CARVING THE PROMISE of cheap aluminum out of the mountainous back country of British Columbia, the Aluminum Company of Canada employs Carl Agar's Okanagan Helicopter Service to shuttle men and thousands of tons of equipment and food to its isolated camps.

Hopping on and off "postage stamp" heliports perched perilously atop and on the sides of steep mountains, Agar and his 'copters are the only means of bringing in material and personnel to many of these almost inaccessible camps. At first the 5,000 hard-bitten construction men were leary of skittering about the peaks in flying windmills, but after a few trips they were slyly manipulating for rides. The 'copters haven't harmed a worker.

Alcan's ambitious undertaking is building a 317-foot high dam and a 10-mile tunnel bored through solid granite mountains to carry water to a new power plant. A tortuous high-line will transport electricity 50 miles from the power plant to a giant aluminum smelter.

Helicopters landed the important transport job in 1949 after Agar piloted a college professor on a survey of the entire construction area. Many were the times the professor had to jump down and hack out a landing area while Agar hovered overhead. With the single helicopter, the vital survey was completed in a mere 20 hours. Awed engineers report that, using the old foot method of surveying, the rugged terrain would have absorbed five long years!

Since its inception, Okanagan Helicopter Service, started by Carl Agar, Alf Stringer, vice-president in charge of engineering, and Barney Bent, a Penticton, B. C., businessman, has grown from one Bell machine to eight. Agar is one of Canada's top airmen. In 1950 he won the McKee Trans-Canada Trophy, Canada's highest aviation award.

Up to August 31, 1953, the service had flown over 1,275 hours, 5,000 passengers and 100 tons of vital supplies on the Alcan job. Agar, who trains his own men, says over 7,500 landings have been made on the project. One of the service's crack pilots, Bill Legg, logged 117 mountain-flying hours in one month. This meant about 700 hair-raising take-offs and landings. A toehold on a mountain is all these choppers need to do the job.

END

*Many school administrators feel that aviation is an essential part of*

# "Higher" Education

By THE FLYING FROG CLUB
TEXAS CHRISTIAN UNIVERSITY

AVIATION AND THE CAMPUS should have a natural affinity . . . and in reality have had, to a greater extent than is commonly realized.

In 1911, when flight was still a novelty, five avid students at Yale formed the first known college Flying Club. In some way they got hold of a Curtiss biplane, already ancient, and decided to hold an air show at Yale Field, charging only a small admission. The public came in droves and the startled collegians split up $5,000 and called it a day.

But the die had been cast. Other campuses, especially in the east, became air-minded. From them went many of the cadets to become combat pilots of World War I.

With the coming of peace, the collegiate flying club idea rekindled and in 1919, representative teams from 26 colleges met at Mitchell Field, Long Island, to hold the first inter-collegiate flying meet in history.

Unhappily, no permanent organization resulted from these early successful efforts and it was not until 1928 that the collegians really started to pull together. In that year ten college groups met at Yale "to discuss problems common to those interested in aviation." The National Intercollegiate Flying Club was born.

By 1934, the NIFC was a going concern under sponsorship of the National Aeronautic Association. Each spring since, with the exception of the war years, the collegians have come together for a Conference and National Inter-Collegiate Air Meet.

At the same time, the campus fliers hold regional and sectional events, exchange ideas and do everything they can to develop and publicize collegiate flying. They have a whale of a lot of fun in the process. Strictly a student show, they manage their local clubs and national events. Loosely organized, they locate their national headquarters each year at the college or university that is to play host to the next intercollegiate meet.

The program has gained wide recognition among university and aviation circles. Many school administrators have come to feel that today aviation is an essential part of the overall educational program. They are certain that the flying clubs give their campuses an exciting and stimulating new sport. There is no doubt but that aviation in general profits from the student activities and that many a fine pilot for the military services first became interested in flying on his college campus.

But, like almost every other organization, NIFC has had its ups and downs. In the beginning, the NAA acted as a service organization for the group and handled the clerical work. Each NIFC member was automatically an NAA member.

NAA sanction insured that all meets were held under standard rules for safety of contestants and spectators. NAA officials supervised national events. And prior to Pearl Harbor, NIFC boomed until it had 83 member clubs, nation-wide.

Successive annual meets were productive of some high class performances. Purdue, Michigan, Stanford, Kenyon, U. of Detroit and a number of other schools pulled down top honors.

With the advent of war preparation in 1941, dozens of the collegiate pilots shifted into uniform and their immediate availability has been widely appreciated. However, the war put a stop to intercollegiate activities and not until 1947 was reorganization effected.

The 1948 annual meet at Ann Arbor, Michigan, produced a suggestion from the NAA that it could no longer sponsor the collegians without some reimbursement and that, for the good of all concerned, the college clubs should assume an independent status. This proposal was put into effect. The new name of National Intercollegiate Flying Association was adopted. END

Members of TCU flying team of 1953 with trophies. Left to right: Jim Haynes, Prof. Troy Stimson (faculty sponsor), John Harville and Marshall Robinson. Harville and Robinson are star backs on the Frog football team.

# Genealogy of American Aircraft

*Long a leader in the lightplane industry, Piper is known wherever man flies.*

By GILL ROBB WILSON

NOT TOO MANY PEOPLE, even those within aviation, have ever known the debt owed by the whole cause of American air supremacy to the light airplane.

The Lindbergh flight to Paris in 1927 had pumped inspiration into the public mind in the wake of a barnstorming era that was romantic enough but gory with crack-ups and just about washed up. After the Lindbergh flight, a lot of cow pastures were turned into public and private airports. Aviation was in business at last at the grass roots level. The Travelairs, OX and Hisso Wacos, Standard "bath tubs," Eagle Rocks, and kindred planes did a thriving business for a few months.

Then, within several years, came the big "bust" and the country went on WPA. The biplane types of sturdy old airplanes were both too expensive to buy and to maintain. In the meantime, the Bureau of Aeronautics had been created and some semblance of maintenance and repair requirements had been applied. This was good but expensive. All-in-all, community aviation faced economic elimination. This was bad because public opinion rested primarily upon the case of local activity.

Then to the rescue of the whole situation came the development of the light airplane—cheap, easy to fly, safe, simple to maintain, and capable of getting in and out of any old kind of an airport. And for a decade—a very critical decade for American security—the lightplane literally carried the destiny of aviation on its back. That the nation had thousands of young men imbued with aviation enthusiasm when war came is due to the story of the lightplane more than to any other single factor. Furthermore, the owners and operators of these little craft were the greatest of apostles for transport and military flying. They planted this seed in thousands of communities and fertilized it with gallant faith.

Now, of course, the story of the light airplane is not exclusively that of Piper, yet we must say in all fairness that there might well not have been a story at all without Piper.

The company originally had been organized in 1927, at Bradford, Pa. Its first model was a $4,000 affair called the *Chummy*. Depression licked that one. But in 1930 came a model economically stressed for even a depression—the *Cub*—so named because its engine of 37 hp previously had been called the "kitten." Operators of schools, accustomed to higher power and bigger ships, at first resisted, but the cold fact of economics forced them to the *Cub*. They could stay in business with it.

By 1935, the *Cub*, which had maintained original design with few changes, was the best known airplane in the world. In 1936, it had its face lifted and was both prettier and better—wider gear, rounded wing tips, cabin enclosure, and fuselage streamlining.

In '37 the factory in Bradford was burned out and Piper moved to Lock Haven, Pa. Production-line methods were possible of development in the new plant and, by 1938, Piper was able to sell the famed 40 hp trainer for $995. By 1940 the 3-place *Cruiser* with 75 hp, dual controls and hydraulics was on the market at less than $2,000.

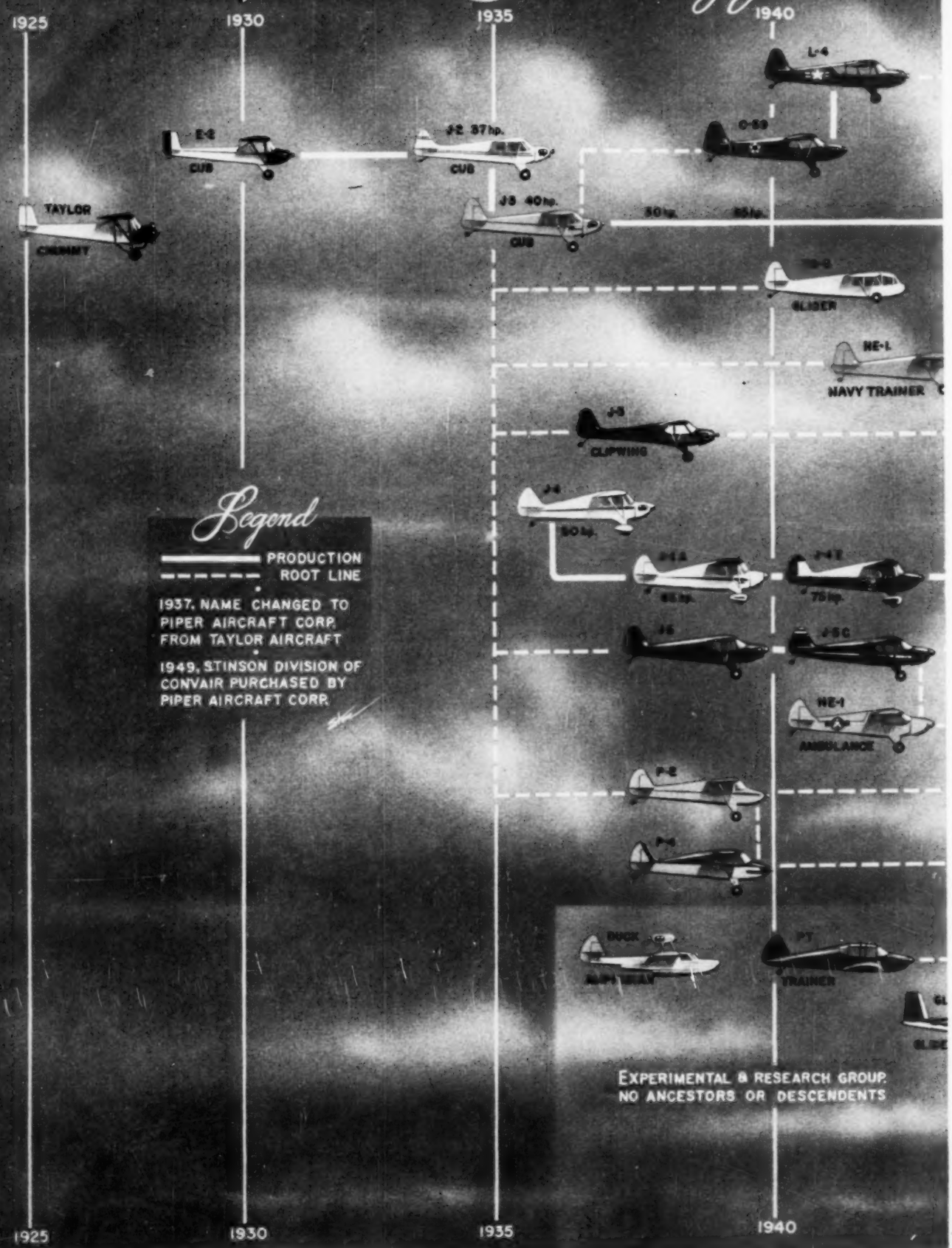
Soon thereafter came the CPTP training program of the government. More than 75 per cent of all aircraft used in that program were *Cub* trainers!

All this activity spurred the Army to adopt the lightplane for "jeep" utility and there was scarcely any combat area that did not become familiar with the L-4.

How Piper reached out successfully from the broad fields of flight training, private ownership and military utility to embrace such specialized fields as agricultural, business and executive, and patrol use, is on the record.

Currently Piper, with a traditional eye to the economics of personal flying, is approaching the market with a twin-engine aircraft, the *Apache*. If history runs true, the *Apache* will have a tribe of enthusiasts on its trail. END

# Genealogy of



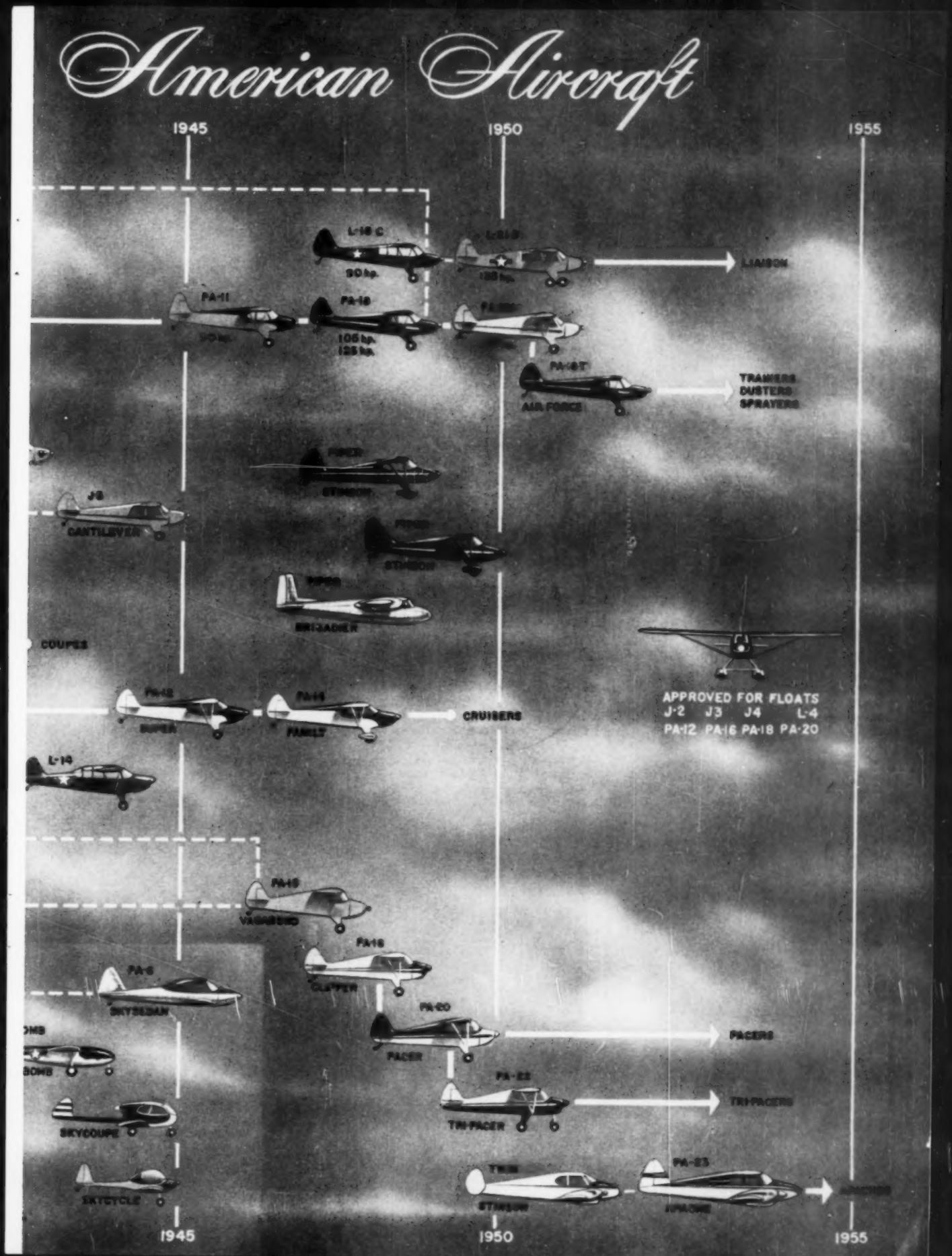

## Legend

PRODUCTION

ROOT LINE

1937. NAME CHANGED TO PIPER AIRCRAFT CORP. FROM TAYLOR AIRCRAFT

1949. STINSON DIVISION OF CONVAIR PURCHASED BY PIPER AIRCRAFT CORP.


American Aircraft
1945
1950
1955
L-18 C
90 hp.
LIAISON
PA-11
PA-18
105 hp.
125 hp.
PA-18T
AIR FORCE
TRAINERS
DUSTERS
SPRAYERS
J-3
CANTILEVER
STINSON
BRIGADIER
COUPES
APPROVED FOR FLOATS
J-2 J-3 J-4 L-4
PA-12 PA-16 PA-18 PA-20
PA-12
SUPER
PA-14
FAMILY
CRUISERS
L-16
PA-15
VAGABOND
PA-16
CLIPPER
PA-6
SKYSEDAN
PA-20
PACER
PACERS
PA-22
TRI-PACER
TRI-PACERS
SKYCOUPE
SKYCYCLE
TWIN
STINSON
PA-23
APACHE
1945
1950
1955

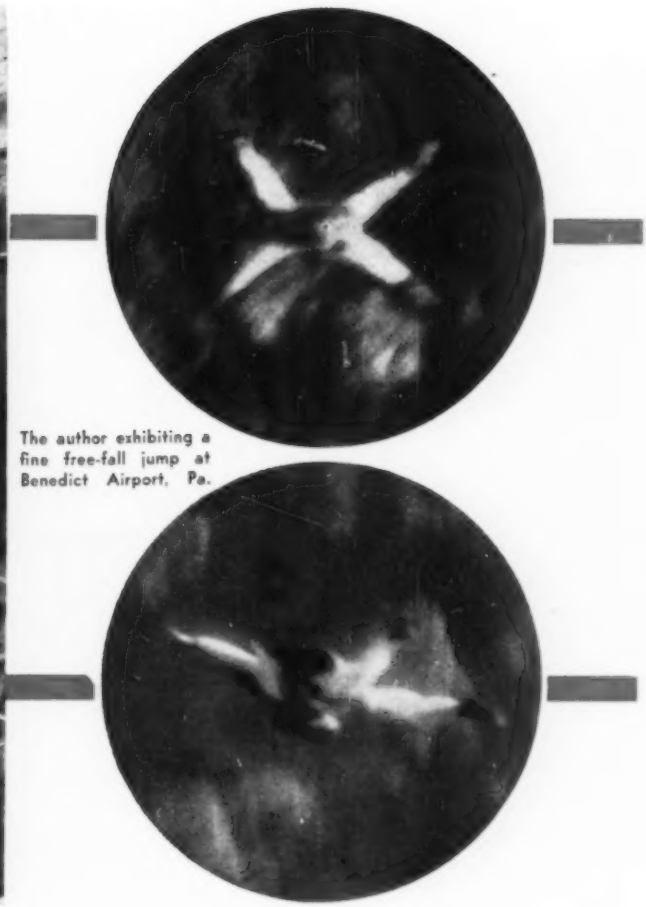
Sam Chasak, state appointed instructor, displays magnificent form in a free-fall parachute jump from a Junkers 52 over Saint-Yan Air Base, home of the National Air Acrobatics School of France.

William B. Young, Jr., only American graduate of the French School of Parachutism, has made 76 free-fall jumps. Note altimeter attached to parachute.

# The

By
RAYMOND B.
YOUNG, JR.

Monique Laroche, champion woman free-fall jumper and licensed instructor, has made over 250 free-fall jumps.



The author exhibiting a fine free-fall jump at Benedict Airport, Pa.

*Dropping a mile or so through space does not dismay*

# Free-Fall French

SEVEN thousand feet overhead, at two-second intervals, eight tiny black spots appear against the sky, falling in parallel lines with increasing speed. After 12 seconds, the speed stabilizes at a constant 110 mph (the lowest falling speed of the human body). The onlooker perceives that this is not ordinary falling but actual *diving*, a perfectly controlled descent in the familiar diver's position, except that the head remains slightly lower. Also most of the divers hold their legs apart—a position somewhat more stable than the regular swan-dive used by a few. After 20 seconds, the performers have lost about 3000 feet altitude and are plainly visible. One can distinguish the various steering moves made to change direction or to check sudden loss of balance due to atmospheric conditions. Some of the jumpers amuse themselves with turns and spins which they start and stop at will. Now one seems to drift diagonally away from the others, having oriented his fall with the wind and thus gained forward speed which will enable him to travel horizontally as much as 300 yards in this one-mile drop.

They are nearing the opening altitude of 500 meters (about 1600 feet) set by the school, the lowest height at which the emergency parachute, carried in front, can still be opened under good conditions, should the other fail (an extremely rare occurrence). The X-shaped silhouettes now loom large against the sky.

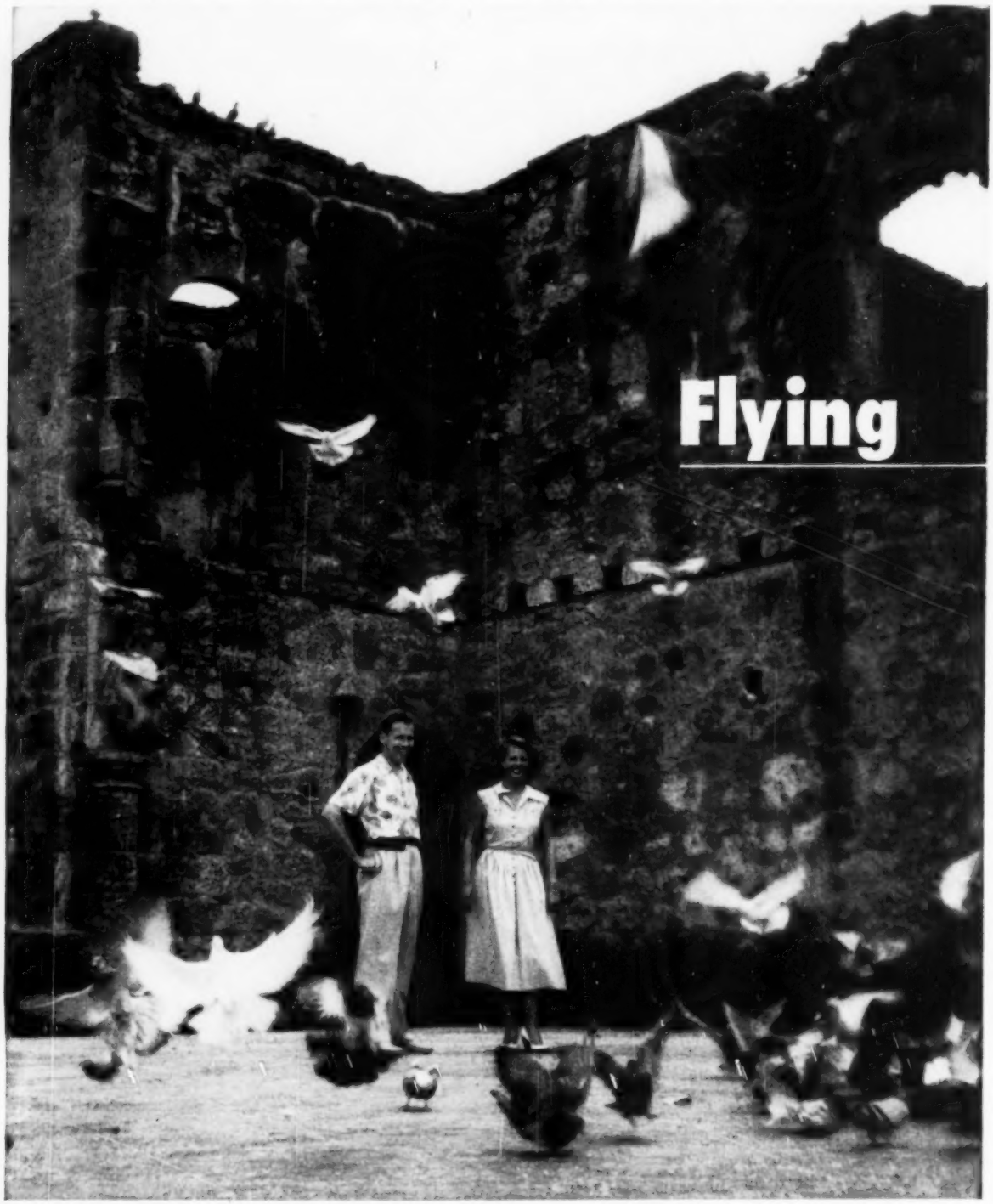
Beginning at one end of the line, that which began the jump, arms can be seen folding over the chest, legs being brought together in a slight crouch but body still facing the ground (a must for safe opening).

Suddenly a white object pops toward the sky—the pilot chute, ejected by spring-action, which drags the parachute canopy straight up for faster and safer deployment, then a long white sleeve—the (*Continued on page* 60)

*Escorted all-expense tours prove profitable to Resort Airlines,*

*the only scheduled carrier placing speed second to the enjoyment of flying.*

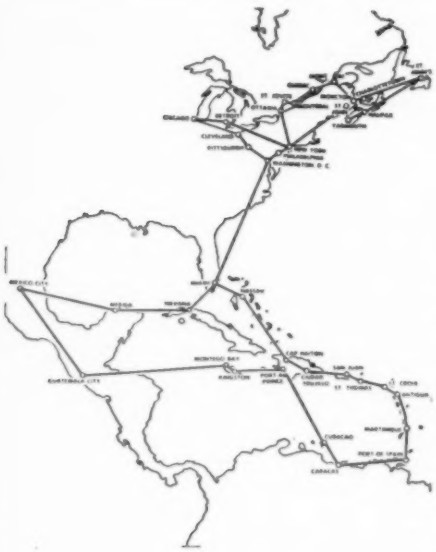
"Flying houseparty" guests visit ruins of the home of Diego Columbus, son of the great explorer, in Ciudad Trujillo, Dominican Republic.



Left: A typical group of vacationers on one of Resort Airlines' "flying houseparties." Below: Buffet at Montego Bay, Jamaica.

# houseparty

By NORTON WOOD



LOOKING FOR FUN, new friends, romance, the lure of strange places? Searching for a little mild adventure . . . for a vacation without care . . . for memories of opaque seas and coral sands and a touch of mystery from days of long ago?

Resort Airlines is founded on the conviction that people are like that and that "Flying Houseparties" through the enchanted islands of the blue Caribbean are one answer to the longing for such things.

Thus the fun-bound congregate at Miami to board one of Resort's big DC-4's which shove off on escorted all-expense tours 12 times weekly during the winter season for Nassau, Cuba, Puerto Rico, Haiti, the Dominican Republic, Jamaica and the Virgin Islands.

Resort isn't in the business of selling high-speed travel nor primarily of providing overseas air service. The big planes are just the best device yet found to provide vacationers with more leisure, more sightseeing, more fun, more romance.

Oh, sure, Resort is a certificated airline with 6,000 miles of route network—the only one of its kind in Uncle Sam's roster of flag carriers. But its planes go where the vacationer wants to go rather than where somebody else wants them to go. And sheer speed is secondary to sheer enjoyment.

Resort takes the passenger by the hand and bids him forget the complications of traveling abroad. The price of one ticket includes everything—travel, food, hotels, sightseeing—everything but the cost of personal laundry and tipping. With every tour goes a cruise manager who makes all arrangements and pays all bills.

Resort sells only round-trip tickets. Uncle Sam gives the airline complete flexibility to schedule stopovers at any of the principal islands of the West Indies, as well as at points in Venezuela, Guatemala and Mexico. Tours can be laid out in any pattern desired, within the 6,000-mile network of certificated routes. Stops can be made in any sequence decided by the airline, so long as the tour includes at least three intermediate points beyond the Miami terminal.

During the winter season, Resort schedules air cruises varying from a two-day swing around Cuba and Nassau ($102.70 with tax from Miami), to 17 days and 16 nights in St. Thomas, San Juan and Ciudad Trujillo ($521.55 with tax). The fare from co-termi- (*Continued on page* 58)

# I missed a red light

*A wheels-up landing was the price this pilot paid for carelessness.*

By RICHARD OWENS, JR.

NO MATTER HOW CASUALLY some pilots talk about a wheels-up landing, it's hard to assume that same frame of mind when you're sitting up there contemplating one yourself. Probably a veteran with a thousand hours or so would tackle the problem with much less sweat and praying but my mere hundred hours offered me little helpful confidence.

I had flown my Culver V to Seattle to spend a weekend there and Sunday afternoon I was at Boeing Field preparing to leave for Port Angeles, about 35 minutes away. A quick glance at the dash revealed the landing gear switch in the "gear up" position. Since the master switch wasn't on at the time, I assumed I had tripped the switch with something when I left the cockpit. I returned the switch to "gear down" position and checked the green indicator light after pulling the master switch which showed gear down and locked.

My two-way radio had given out a few days before and it was only receiving at the time. Ordinarily, with the radio functioning, I would have been cleared to the main concrete runway but without it I was forced to use the gravel lightplane strip which was hard on the Culver's low-slung prop.

A green light from the tower signaled me for take-off, so, giving her the gun, I was on my way. After clearing the end of the strip, I flipped the switch to "gear up" and, as usual, the green light went out but the red light which indicates gear up failed to light. After a little whistling in the dark, I presumed that the red light wiring had pulled loose again and decided to fix it once and for all after returning home. I was still in a climb at the time and couldn't check the airspeed to convince myself the gear was up.

The author at home.

At 3,000 feet I leveled off and waited for the airspeed to reach its usual 125 mph. It slowly climbed to 95 and just stopped there. I then knew my loose wire theory was only wishful thinking and the gear wasn't up or down and locked. I knew now it was somewhere between these two positions but had no way of telling where.

On a previous flight I had taken off with a nearly dead battery which had enough power to pull the gear part way up but not enough to completely retract it. In this case, after returning the switch to the gear down position, the gear promptly fell into place and locked. Remembering this, I flipped the switch again, expecting the gear to do as before but with no success. I again returned the switch to the gear up position and could feel the landing gear oscillating in some weird pattern. I immediately cut the master switch for fear that the landing gear would fly in all directions.

About this time I was really thankful that a Culver V has an emergency manually operated gear extension system and I eagerly went at it with both hands and much gusto. My enthusiasm was cut short, however, when countless turns on the crank netted nothing more than a sore back and a new pitch to my rising hysteria. As a last resort, I tried some violent dives and pull-ups with about as much success as before, so I simply had to face the fact that the gear wasn't going down and I was in for trouble.

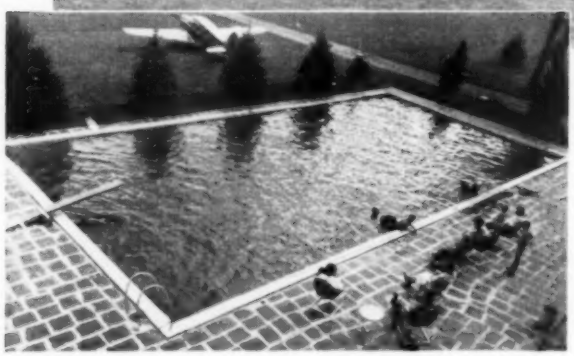
Now my problem was to decide where I should attempt my landing sans wheels—here in Seattle or home in Port Angeles. I finally decided on the latter, thinking that a half an hour in the air would calm my nerves somewhat and also burn up some of that gasoline which is only a plywood thickness from the ground during a wheels-up landing. Ordinarily the flight over the Puget Sound country is a beautiful trip with the snow-capped Olympic Mountains dominating the western skyline, but despite the cloudless skies, I completely failed to appreciate it.

After arriving over the field the sun was still shining, so I thought by flying low over the strip I could see my shadow and determine in which position the gear actually was. I made a pass but the sun's low angle produced a distorted shadow. The wheels looked as if they were turned in only slightly. I flew past the tower several times with my set tuned to 278 kc, hoping they might try to contact me. Apparently no one thought to try to reach me—not that it would have done any good—so I climbed to traffic pattern elevation and headed for the asphalt.

My landing plans consisted of a normal approach and flare-out at minimum speed (a Culver V stalls at 69 mph) and readiness to switch off the ignition just before contact. I went over the usual check-off list: prop in low pitch, full rich mixture, flaps down—all okay—except gear not down and locked.

After flaring out, I cut the switch and waited for the crash. I felt the wheels touch the ground momentarily, then the prop disappeared in a million pieces. The deafening racket was terrifying and I was sure the plane was ripped wide open from stem to stern. I unsnapped my safety belt, threw the canopy up and was out before it stopped. There was lots of smoke from the friction but no fire, and at last it was over.

It was surprising how little damage actually oc- (*Continued on page* 40)



Ever want to find an airport where you could taxi up to a swimming pool and do your hangar flying in the pleasant atmosphere of an aviation country club?

# Sky Manor

*A welcome addition to the flying scene—an aviation country club*

By T. H. ALISON

WHEN Robert Theisz decided to close the ground travel gap between his flying hobby and his home, he figured he might as well do it up right by building an aviation country club in his own front yard.

That was four years ago. Today the Sky Manor Aviation Country Club at Pittstown, N. J., is one of the pleasantest spots any pilot can visit.

Situated atop a hill in the rolling countryside of north Jersey, Sky Manor has three smooth turf runways 3,500, 2,000, and 1,350 feet long. The longest is lighted and the field has Unicom. Although the nine individual T-units are usually taken, adequate tie-down is available.

A remodeled barn houses a snack bar and restaurant, club rooms, attractive overnight lodging accommodations, recreation rooms and office. In front of the barn is a swimming pool and across the lawn is the Theisz home, a lovely old Colonial dwelling.

A building contractor, Mr. Theisz has taken a great deal of pleasure in remodeling the old farm, making it the sort of recreational flying center that he had tried to find in the nine years he has been a pilot.

While the welcome mat is always out for any pilots who wish to use the airport, the recreational facilities are limited to members of the Sky Manor Stick and Rudder Club. This group, while certainly not ultra-exclusive, does tend to keep the facilities available to those pilots and their guests who value and appreciate the unique character of the place.

Robert R. Theisz

Popular throughout the region with numerous flying groups, Sky Manor often is host to breakfast flights and makes its facilities available for fly-in or drive-in meetings of aviation groups.

Very active in Civil Air Patrol doings, Mr. Theisz is Commanding Officer of the Sky Manor Squadron which has 23 senior members and is getting a cadet program underway. If a top-notch meeting place has anything to do with the success of a CAP program, the Sky Manor Squadron should prosper.

With the quiet atmosphere of a well-kept, efficiently managed, country residence where folks gather who enjoy the social benefits and sport of flying, Sky Manor makes a welcome addition to the aviation scene. Every pilot who believes that flying could do with a few country clubs in its makeup should visit the one that Mr. Theisz has built around his home.

END

An old corn starch box with open ends was the first wind tunnel.

THOSE OF US who flew in the Lockheed *Constellation* that day are not likely to forget it. Orville Wright was at the controls. It was the famous inventor's last flight. He never again ventured aloft in the flying machine which he and his brother, on December 17, 1903, gave to the world.

This was in the spring of 1945. The Air Force had invited Orville aboard the *Constellation*, first of its kind to be delivered to Uncle Sam. Newspapermen and top brass from Wright Field were other passengers on the demonstration flight.

With Wright at the controls the plane circled the site a few miles east of Dayton, Ohio, where in 1904-05 the two brothers worked to improve the machine they flew at Kitty Hawk in 1903. We could look down on the world's first flying field, Huffman Prairie, the cow pasture where Wilbur and Orville flew the second machine. The spot today is part of the sprawling Wright-Patterson Air Force base.

I stood directly behind Orville in the ship's cockpit. He was 74 then. His grey eyes, a little watery now, squinted at the myriad of dials and gadgets on the instrument panel. Only one or two of the readings meant anything to him. He had lost touch with the instrumentation of modern flight. His wrinkled hands trembled as they held the mahogany control wheel. The plane was virtually flying itself, but he banked the ship and made it circle and levelled it off again. He flashed a gold-toothed grin at Maj. Gen. Frank Carroll, chief of the Wright Field research and development program, who was sitting in the co-pilot's seat. That grin said he was satisfied with his coordination—pretty good for an oldster! The trick was still balance and equilibrium.

"How does she feel?" the general asked.

"Oh, she flies just like the first airplane," Wright chuckled.

There was truth in those words. The basic principles of flight uncovered by Wilbur and Orville Wright haven't changed one iota in half a century. Indeed, the Wrights gave us far more than merely a successful machine. The formulae they devised and proved are just as true now as they were at Kitty Hawk. Every designer refers back to the Wrights' basic tables of air pressures and airfoil curvatures when he sits down to the drafting board to plot the planes of tomorrow.

"They were more than just pioneers," Charles F. Kettering life-long friend of Orville Wright has said. "They were truly great scientists probing for knowledge of the unknowns as well as for end-result achievement."

The fact is the Wrights never claimed to have invented the flying machine at all. The first time I met Orville, in 1937 when I was a cub reporter covering the aviation beat for the *Dayton Daily News*, the inventor himself made the point very clear. (*Continued on page 54*)

*Teaching themselves to fly was a scientific achievement*

*for Wilbur and Orville Wright who had to design and test the first flight controls*

# Wilbur and Orville—

By DOUGLAS J. INGELLS

# Student Pilots

## THE PRO'S NEST

*EDITOR'S NOTE: Suggestions of veteran airmen relative to good flying practice and procedure will appear in a series of articles under the above heading.*

# Flying the Omnirange

By JOHN R. HOYT

TAKE A GLANCE at your Omnirange receiver and notice the Vertical Needle: it's drifting off to the left. Which direction should you turn in order to center the needle again and get back on course?

This problem is simple—if you know the rules. There's a simple rule that will enable you to tell instantly—without any difficult mental gymnastics—what to do. And let's admit this: there comes a time when we don't want to be bothered with difficult problems in the air, especially when the going gets tough and the pilot doesn't want to be faced with problems in reasoning.

Some pilots may say that the answer to the example above depends upon whether we are flying toward the station or away from it. So let's take a practical example and work it out. Sometimes a simple rule is worth its weight in gold even on an inflation standard!

We're over Los Angeles and we tune in the Long Beach Omnirange. After we identify the station by listening to the code or voice identifier, we rotate the Course Selector (Fig. 1) until the Vertical Needle is centered

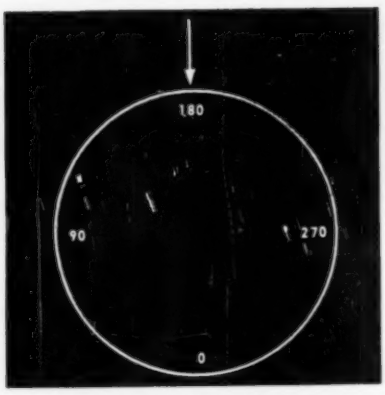
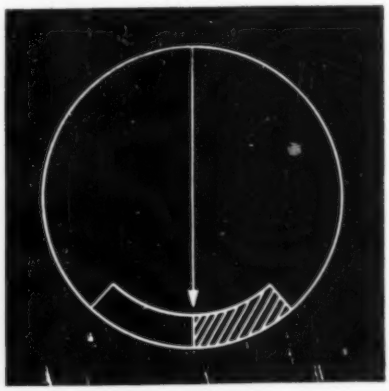



FIG. 1

ROTATABLE COURSE SELECTOR DIAL.



VERTICAL NEEDLE.

FIG. 2

(Fig. 2). Next we check the TO-FROM needle: it says FROM so we change the dial or flip the reciprocal switch, depending upon our type of receiver, and the needle swings over and reads TO (Fig. 3).

Reading the Course Selector dial we find that the course to the station is 180°, which is the magnetic course, so we don't have to add in variation. If the deviation is only a degree or so, we'll forget that too. Now we turn to a heading of 180 and hold it, watching for the Vertical Needle to swing to either side. It finally swings slowly off to the left. (Fig. 4).

Here is the handy rule:

*If the compass heading and the Omni heading are the same, fly toward the needle.*

Or think of it this way. "I am going to fly over to the needle." Therefore, turn 30 degrees to the left and hold that new heading until the needle is centered.

"Why," you ask, "30 degrees?" There are several reasons for this. First, a standard cut or "bite" is good practice. Second, 30 is a sizeable figure and is almost always big enough to offset the average wind on the first bite. Third, it takes the plane over to the desired course rapidly. Remember, however, that the 30-degree bite is taken on the *new* course, not the one we have drifted to! That is, we turn to 150° which is 30° to the left of 180.

The Omnirange is different from the Automatic Direction Finder because one may alter the heading momentarily without moving the Omni needle—one may fly a complete circle and the needle would remain centered (providing, of course, that the plane was a few miles away from the station!) The ADF, on the other hand, would move with each change of heading, which makes the Omni confusing to pilots who have practiced with ADF.

For the private pilot the Omni has the advantage of helping the pilot to automatically crab for drift because as long as he keeps the Vertical Needle centered he is on course. Suppose that we have flown a heading of 150 for a few minutes and the Vertical Needle of the Omni comes back to center. Instead of flying 180 again we will crab, or fly into the wind, about 10 degrees left, taking up a heading of 170 and holding it just as we did before. When the needle drifts to one side or the other we compensate by flying toward the needle. It is not necessary to take a 30-degree bite this time, inasmuch as we are already compensating for drift.

Now comes the handy part of our rule. We arrive at and pass over the station . . . the TO-FROM needle and the Vertical Needle oscillate and finally the TO-FROM needle steadies down on FROM. For some reason the Vertical Needle swings off to the left. Which is the right direction to turn in order to get back on course and center the needle?

The rule still holds!

*If the compass heading and the Omni heading are the same, fly toward the needle.*

That is, the needle is on the left so we turn to the left, regardless of the fact that we are no longer flying inbound but are now outbound. As long as the compass and the Omni are within 80 degrees of each other, fly *toward* the needle. (Of course, if we fly a heading of 180 with the Course Selector on the reciprocal of 360, we should fly away from the needle—that is obvious. But in that case the compass and the Course Selector would not be the same and the rule would not apply.)

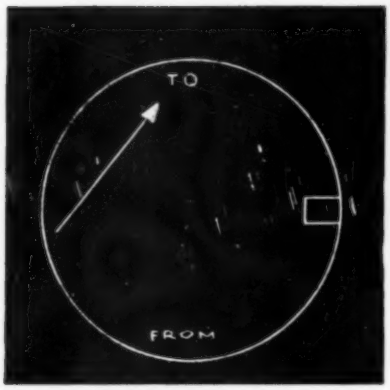
But suppose we don't want to stay on a heading of 180 out of Long Beach, preferring to go to the airport on a heading of 298°. We cross the station and turn to 298 but the radius of the turn takes us out to 290. Which way should we turn to center the Vertical Needle?

In the first place, one can't center the needle on any heading but 180 as long as the Course Selector is set on 180! We must first set the Selector on the course we want, which in this case is 298. Now let's see what happens.

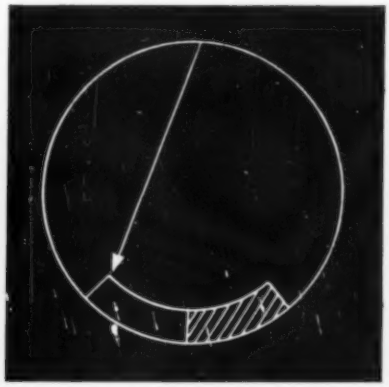
We want to fly to a "radial" of 298 (all Omni directions are measured out from the station on radials) and the compass is 298. The plane is to the left of the 298 radial, so the needle will be off to the right and we must fly to the right in order to center the needle. And as for drift, inasmuch as the wind was from the east up to this time, we probably have a tail wind now; we steer 298 and watch the needle, knowing that when it becomes centered we will be on the desired radial of 298. Very easy!

Here is another way to use the Omni. Suppose from your position north of Long (*Continued on page 50*)

**FIG. 3**



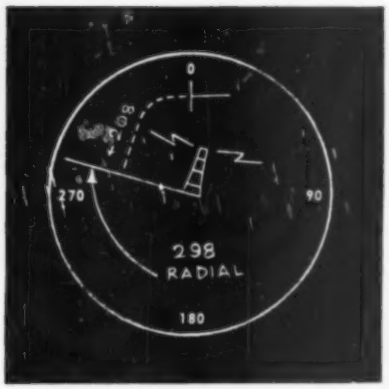

TO-FROM INDICATOR.



VERTICAL NEEDLE.

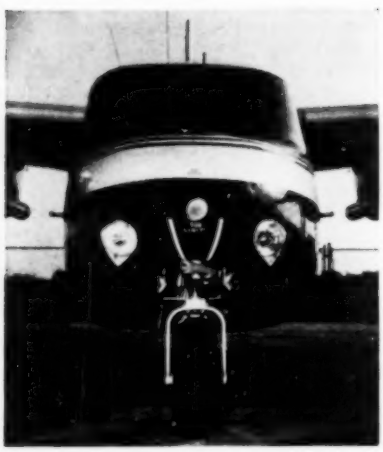
**FIG. 4**

**FIG. 5**



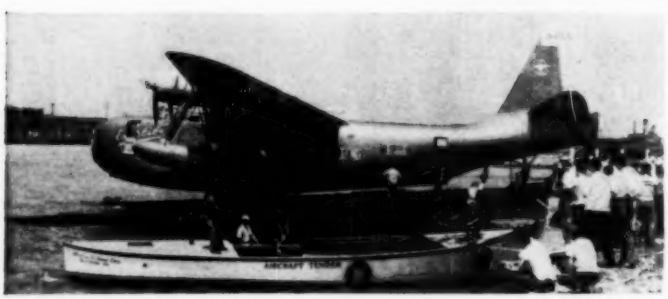

AZIMUTH FOR MENTAL ORIENTATION

**BEE FAMILY** With the single-place *Honey Bee*, shown at left, certificated by the CAA, the manufacturers, Beecraft Associates, Inc., have announced plans to develop an all new four-place cross-country plane to be called the *Queen Bee*, model of which is shown below. The *Queen Bee* as currently planned will be all-metal, with 150-hp giving an estimated cruising speed of 150 mph. It will be tricycle geared. Beecraft engineers also are planning a two-place version of the *Honey Bee*, identical to the prototype except for side-by-side seating. It will have an 85-hp engine and cruising speed around 125 mph. The company believes the two-place ship will be especially useful for training purposes "because of its simplicity, economy, and tricycle landing gear."



**TWIN CESSNA** Newest member of the Cessna team, the twin engine Model 310 shown below made its formal appearance in January. The five-place executive twin features wing tip fuel tanks with total capacity of 100 gallons, cross-feed fuel system, fully retractable tricycle gear, all internal antenna masts and wires. The two 240-hp Continental engines have all-metal, controllable constant-speed full-feathering props as standard equipment. Performance indicates range of 875 to 1,000 miles; sea level top speed of 220 mph; cruise of 205 mph with 70% power at 8,000 ft., 190 with 60% at 10,000, or 175 with 50% at 10,000. Single engine service ceiling at 4,600 lb. gross is 7,500 ft., at 4,300 gross is 9,300 ft., at 4,000 gross is 11,000 ft. With maximum gross load of 4,600 lb., useful load is 1,750 lb. Price is $49,950, f.a.f., Wichita, Kans.

**TIP TOE** Now standard on all Aero *Commanders* is a power steered hydraulic nosewheel. The new "Tip Toe" steering operates in connection with the hydraulic braking system and is believed to be first such system installed on aircraft other than large commercial transports.

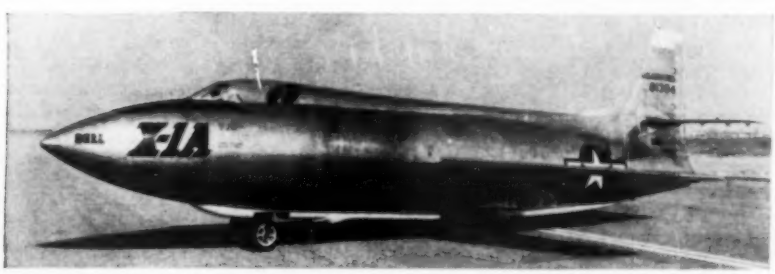


**LAST OF THE BIG BOATS** Believed to be the last of the 4-engine flying boats in commercial service in the U.S., the ship being launched in the photograph at the left is also the last of three long-range flying boats built by Sikorsky in 1942. Overhauled by the Aviation Exchange Corp., Baltimore, Md., the big boat will be used for non-stop freight and passenger service to Lima, Peru.

**AIR TRACTOR** Designed specifically for aerial dusting and spraying, Central-Lamson's new *Air Tractor* recently underwent extensive flight tests. Large gap and stagger are for increased lift efficiency. Spill plates on wing tips increase aspect ratio and give more even distribution of spray and dust. Uncovered rear section of fuselage allows easy cleaning after using corrosive dust or spray. Gull wing section shown at left gives better visibility during dusting runs. Instruments are mounted in gull roots so pilot does not have to shift eyes to cockpit while flying at less than five feet off ground. Gas tanks are in gull sections, feed by gravity. With its 450-hp Pratt & Whitney Wasp, Jr., engine, the *Air Tractor* will carry between 2,500 and 3,000 pounds of material. Test pilot James A. Clark terms the aircraft's performance "excellent in every respect." The prototype, built in the Yakima, Wash., shops of Central Aircraft, Inc., has roughly the same wing span as a standard Stearman biplane duster, but is somewhat longer and higher.

# Have you seen?

**SABRE TRAINER** *At right*, the nation's first transsonic trainer, designed for advanced pilot training in high speed flight, gunnery and dive bombing is this North American TF-86, two-place version of the Korea-famed Air Force F-86 *Sabre Jet*. The swift prototype trainer is basically an F-86 with tandem cockpit, dual controls and a fuselage five feet longer than the fighter version. It has a speed of over 650 mph, maximum service ceiling of 45,000 ft., and combat radius of 600 miles. Provision has been made for two .50 caliber machine guns for gunnery practice. It also has the North American "all flying tail" with artificial feel and irreversible control systems.




**FLYING LABORATORY** The new holder of world's unofficial speed record is the Bell X-1A *(left)* recently piloted at more than 1600 mph by Maj. Charles E. Yeager for the Air Force at Muroc Dry Lake. The X-1A was designed to investigate the aerodynamic effects of supersonic flight. The ship is equipped with approximately 1000 pounds of extremely complex instrumentation.

NO. 170

# I Learned About Flying From That!

The author at the time of his departure from Hawaii.

By LT. CMDR. H. D. O'NEILL, JR.

*The bad moments are often the most valuable.*

I HUNG UP THE PHONE and looked out the window. The rain was a cold drizzle. I cursed myself for being in an all-weather fighter squadron. Then I ran to pack my bag.

At Moffett Field, the skipper smiled when he saw me running up the ladder to the third deck of the imposing hangar.

"Take it easy," he said. "You can make up time in the air." He briefly outlined the situation. "Airpac wants your night fighter team in San Diego for carrier qualifications tonight. The carrier is out with three destroyers. There aren't any other planes available to go aboard." He caught my glance toward the window. "It's okay. You'll have clear weather south of Fresno and a full moon tonight. If you clear immediately, you can make San Diego before dark."

When I checked aerology for clearance, they reported a frontal movement south of Monterey, accounting for weather over Moffett Field. However, the worst weather had not moved inland. Fresno was reporting 15,000 overcast with haze. Bakersfield, Los Angeles and San Diego reported CAVU. The duty officer estimated contact conditions after leaving the Salinas intersection. I asked about the tops of the clouds, and was given an 8,000 foot estimate with a strong caution that it was only an estimate. I completed my clearance and my dead reckoning navigational data.

Leaving aerology, I checked my flight gear. I had everything except my oxygen mask. "Well," I thought, "at 8,000 I won't need oxygen."

Nan Peter Four looked good. She was painted and glistened freshly in the rain. I climbed into the cockpit after a cursory external check. I turned over the engine, called and received taxi clearance, and taxied to the end of the runway for a final run-up—completely unaware that I had made two mistakes that were to result in the worst half hour I had ever spent in some 3,000 hours in fighters.

At the end of the runway the tower operator called and gave me my ATC clearance. I was cleared direct to the Salinas intersection, then Blue Ten, Amber One, to San Diego. I was to report leaving 8,000, 5,000 and 6,000 when reaching 500 on top, and to cruise and maintain at least 500 on top. I read the clearance back, acknowledged permission to take off, taxied onto the runway and applied power.

After passing the end of the runway, I leveled off at 1,000 feet and headed for Moffett Radio to pick up the southwest leg. Moffett was coming in strong and clear. As I settled onto the beam, I made a last visual check before going on the gauges. On my right, as I headed southwest down the Santa Clara Valley, the Santa Cruz mountains were obscured. On my left I could see the foothills which I knew extended upwards, culminating in Mount Hamilton, which also faded into the rain. When I caught the first few cloud streamers of the overcast at 3,000, I could see Santa Clara passing beneath me.

Then I was on instruments. The rain increased. An occasional glance outside the cockpit revealed nothing but the familiar dull grey of the lower clouds. At 4,000 feet I picked up turbulence and precipitation static, although I could hear Oakland loud and clear after I had reported leaving 4,000. At 5,000 the precipitation static increased. Still I could hear the Moffett on-course signal through the interference, and Oakland Radio came in fairly clear. I wasn't too concerned, as I expected to be on top within another 3,000 feet.

Then at 6,000 I lost whatever complacency I may have had about this being a routine climb through the overcast. I called Oakland, advising that I was leaving 6,000. At the same time the air became very turbulent, the rain was heavier, and it was impossible to read Oakland. The Moffett beam continued to come in strong, however, so holding course presented no grave problem. Then as I listened, the beam receiver suddenly went completely dead.

For a moment I thought of turning back, yet I hesitated to descend into the valley with no beam to insure that I could remain on course. I visualized running into the Lick observatory or one of the innumerable hills edging the narrow southwestern approach to Moffett Field. Too, with the VHF radio jammed (*Continued on page* 62)

# OPERATORS' CORNER

National Aviation Trades Association (NATA) is a service group that represents all service segments of the airport, fixed-base and air service operator. Its staff represents a federation of State Chapters and Members-At-Large. Its purpose is to fountainhead all activities of the American Operator, and to act as a sounding board for better public relations. Its aim: to improve air service operations and promote greater aircraft utilization.

Headquarters are located at 1346 Conn. Ave., N. W., Washington, D. C. Members receive a monthly "Washington News Letter" of confidential legislative and policy news in the making.

National Air Taxi Conference, same address, an affiliate of NATA, represents operators engaged in perfecting and standardizing a system of "through" air transportation.

Opinions expressed in this column are not necessarily those of FLYING Magazine.

One of the most interesting sections of the NATA annual convention was the Aerial Applicator meeting. Outstanding research and operations leaders in the applicator field addressed the group including, *above:* Alexander Williams, chemical engineer of Shell Chemical Co., Atlanta, Ga.; A. L. Baxter, president of Central Aircraft Co., Yakima, Wash., holding a model of his new *Air Tractor*, a plane designed specifically for dusting and spraying (see page 37 of this issue); Fred E. Weick, director, Aircraft Research Center, Texas Engineering Experimental Station; Tom Ferguson, NATA vice-president for Agricultural and Applicator activities; and Dr. J. C. Chamberlain, U. S. Department of Agriculture, Forest Grove, Ore.

**VOLUNTEER FIREMEN**

A modern touch has been added to the Bainbridge, O., Volunteer Fire Department. Don Hein and Bill Dickerson, instructors at Horn's Flying School, Chagrin Falls Airport, are on the "alert" list of the department. When a fire is reported they fly over the area and, if in a wooded section, pick out the best route for moving fire equipment to the scene, then scan the roads for the fire truck and direct it to the blaze.

**ANOTHER COMMANDER AT WORK**

To take up a heavy schedule of tying together Air Associates plants and branches bracketing the continent, the company has added an Aero Commander to its fleet of 10 single-engine aircraft. Here taking delivery at Oklahoma City, Okla. are Marvin Parks and Herbert Ackerman of A.A.

Another highlight at the convention was presentation of an award to C. K. (Buddy) Faught, former Wyoming Aviation Director, in appreciation of his splendid services to general aviation while serving in the Defense Air Transportation Administration in 1951 and 1952. Shown above at the presentation are: Frank Shelton, newly elected president of NATA; Grover Loening, guest speaker; Faught receiving the award from Robert Northington; and Wiley Wright from CAA headquarters in Washington, who served as toastmaster at the banquet.

## Mayday Yo-do

*(Continued from page 17)*

with a narrow stretch of hard-pan between two steep hills, was conceived to have possibilities as an emergency strip for distressed aircraft. Carrier planes with gas low or structure damaged, so that only a crash landing was possible, needed an alternate haven. And often there came over Wonsan land-based aircraft unable to stretch their flight to a field behind our lines.

Navy decided then to build its first airfield in Korea, 50 miles behind enemy lines. A Construction Battalion was moved in. Working in plain sight of the enemy, the Seabees bulldozed a strip 200 feet wide and nearly 3,000 feet long—every inch of flat ground available—and installed emergency lighting for night landings. A helicopter landing circle also was cleared on the sheltered slope of the outermost hill.

Less than 3,000 feet is hardly any runway at all for combat aircraft, so it precluded the use of Yo-do's field by heavy bombers. But there was plenty of business from the large number of U.N. fighter aircraft passing over.

Where all other airfields in Korea were known by numbers, the valiant Seabees selected their own name for their finished project. It was officially christened Briscoe Field in July, 1952, after Vice Admiral Robert P. Briscoe, a former Seventh Fleet Commander and later Commander Naval Forces, Far East.

Briscoe Field, as might be suspected, attracted more than mild attention from unfriendlies in the Wonsan hills. From the first it was pounded industriously with high explosives. The Seabees repair group which remained put the runway back together more times than they can remember. There were three positions on the mainland from which fire was particularly intense—Hodo-Pando, Kalma-Gak and Little Eva—the last being a worrisome outpost which the Seabees also named.

With the field built, the garrison of U.S. and ROK Marines was augmented, and Navy aircraft mechanics moved in. Yo-do dug deep, and awaited its customers.

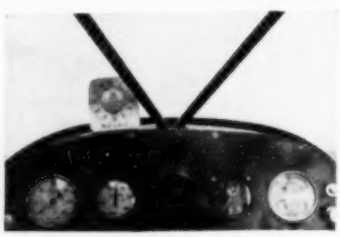
They were not long in coming. When the carrier strikes were inland, the weather sometimes closed down at sea, making deck landings impossible. Planes with gas enough were directed to more suitable fields behind U.N. lines, but Yo-do received the emergencies. Planes which previously would have ditched at sea, came hurtling down to the little strip. The first seven fighters to come in, according to records kept on the island, carried a total of fifteen gallons of gas between them!

Often there were unavoidable landing accidents, when pilots lacked complete control over combat damaged aircraft but shunned the idea of bailing out. Yo-do's mechanics replaced landing gear, wings, tail sections, and engines in the semi-shelter of one of the hills. When a plane was beyond their capacity to repair, needing parts not available at Yo-do, a Navy barge was called in at night and the plane towed to a repair ship offshore.

During its year of operation as an emergency landing field, 38 distressed planes—mainly jet fighters, but some propeller-driven fighters, light bombers and even a helicopter—availed themselves of salvation at Yo-do. In the 38 planes were 50 fighting airmen.

Navy headquarters in Yokosuka, Japan, estimated that Briscoe Field was a $5,000 investment which saved $10,000,000 worth of American aircraft in the year before "K"-Day. Valuable parts of the more heavily damaged planes were salvaged. But nearly all aircraft which utilized the emergency strip were made flyable, and departed their refuge to fight again.

And as for the lives saved—well, if Yo-do had been the happy answer to but a single cry of "Mayday," its building would still have been a great story. END



### A FLYING TIP

Borrow a tip from a housewife. An inexpensive kitchen timer, installed in the plane, saves wear and tear on the memory and is a boon to the busy, as well as the absent-minded pilot.

Set timer to remind you when to switch gas tanks, when to tune in on regular weather broadcasts, for ETA over important check points or for elapsed time between check points. To determine elapsed time, set timer for one hour and subtract remaining time upon landing from one hour. Timer can be mounted easily with suction cups or metal screws to top of instrument panel or any convenient point in the aircraft.

—ALICE S. FUCHS

### 1600 MPH AND MORE!

Pioneer test-pilot Larry Bell, Pres. of Bell Aircraft Corp. which built the X-1A flight research plane, greets Major Charles Yeager, USAF, following his speed dash in the rocket powered X-1A. Reaction Motors, Inc. produced the engine.

## I Missed a Red Light

*(Continued from page 30)*

curred. I looked for pieces of landing gear around the area but later found that the wheels had retracted completely and there wasn't even a scratch on them. The plane had hit perfectly level so neither of the wings had touched the ground until it had stopped and only the pitot tube was damaged. The belly was scratched, of course, but there was no structural damage there either. Both exhaust stacks were bent and the prop broken and that was about the extent of it.

After checking the cause of the failure, we found a small pinion in the power unit had stripped all its teeth which made the whole system inoperative. The reason the gear had oscillated was the fact that a few teeth were still effective which produced a back and forth travel instead of a continuous retraction. The emergency crank also operates through this same set of gears and is completely useless if a failure of this type occurs.

If I had made a landing gear check on the ground after noticing the gear switch in the wrong position, the trouble would have revealed itself. A combination of master switch on and the gear switch in the "gear up" position could probably have stripped the gears, since the wheels would have been unable to retract. Whether or not the switch location had anything to do with the failure, I'll never know, but at least it was a glaring sign post that could have pointed to trouble—and did.

I disregarded it and paid the price but pass on my experience to fellow pilots in the thought that it may stand them in good stead if similar circumstances occur. END

### BEAR BY AIR

From southern Norway to a forest reserve, Vassfaret, the bruins rode in style to their new home north of Oslo, via the charter planes of Wideroes Flyveselskap og Polarfly.

# FLYING FARMERS

By BILL RENSHAW

### THINGS TO COME

Imaginative Flying Farmers have flooded us with replies to our recent query "What will the Flying Farmer airplane be like a generation hence?"

Writing from Ottawa, Canada, Rene Charette envisions great strides far short of a generation, with a target date of 1960. Charette says that by that time light planes will feature what he terms "speedomatic control and automatic flap control."

"The safety plane," as Charette calls it, "will be designed so that it cannot be made to dive, slip, stall, or spin. It will have," he concludes, "an engine but no throttle, rudders but no rudder pedals, flaps but no flap lever."

Sounds fantastic, doesn't it? but so did the dreams and ambitions of the Wright Brothers, Edison, and Fulton—to mention just a few of yesterday's dreamers.

Strong non-conventional forecast comes from Mott Taylor, designer and builder of the Aerocar, Longview, Wash. "Tomorrow, Flying Farmers' airplane will be an Aerocar," Taylor says, adding, that it will be very much like today's Aerocar except that it will be four place (today's is presumably two place) and probably four-wheel drive. He also ventures a guess that it may be powered with something like the present Boeing 502 Turbine.

Rapt in discussing his handiwork, Taylor predicts that the Aerocar our boys will buy when they have matured into Flying Farmers will be an all around "work horse" (no pun intended). "It will," Taylor prophesies, "be a truck, a car, a source of power for belt jobs, a small tractor, and, of course, most important of all, an airplane." Taylor concludes by pointing out that FF's will make trips with an Aerocar by air when they know weather is "souring" that FF's would not make with conventional planes. The Aerocar, Flying Farmers will simply convert to a car and continue, all the while towing the wings and tail assembly until weather is again good. That is about it, he thinks, unless someone comes up with "anti-gravity units."

* * *

### MORE ON "LITTLE AVIATION"

Midwest Flying Farmers, essentially frugal, are "hopping" mad at CAA. The new phonetic "lingo"—the behind the scenes maneuvering on the nautical mile—caused Flying Farmers to ask: "Just whom do these boys think they are working for?" Then came the move abolishing the Aviation Development Advisors, the last contact the little guy in aviation had with the great white fathers in Washington. This was the straw that caused many to think that they should spin their props and take off for the scene of these iniquities.

The letters which poured into CAA in Washington are, many believe, only a very mild sample of things to come if the wishes of little aviation continue to be ignored. Said John Straub, secretary of Indiana FF's: "We here in the Midwest feel great concern and anxiety because you are abolishing the positions of Aviation Development Advisors; it is our earnest wish and hope that you will reconsider." Said Virgil Joyce, Ind. FF president: "This action violates the congressional intent of the law which created the CAA to foster and promote aviation." In a similar vein, Fred Disosway, Illinois FF, wrote: "Flying since 1919 has had difficult going, especially 'little aviation'; the present time is no exception. We need all the encouragement and assistance possible."

* * *

### THE MORE THE MERRIER

This column continues to receive many letters asking, "who do I contact to join the Flying Farmers in my state?" Probably the best answer is, "write us." We will be happy to supply the name and address of the FF officers for the state from whence comes the inquiry.

Latest query came from H. F. Bornmann of Mt. Jackson, Virginia, who asked: "Are you interested in organizing a state FF Chapter in Virginia?"

The answer is a vigorous "yes." This column is interested in seeing all flying farmers become members of live-wire state organizations. Strong state groups will naturally strengthen the National Association. The National has a big job ahead of it—one that will require all the strength it can possibly muster. The job ahead of flying farmers lends emphasis to our "yes, we are interested in helping Virginia farmers, who fly, organize a FF organization."

* * *

### PRACTICAL BOOSTER

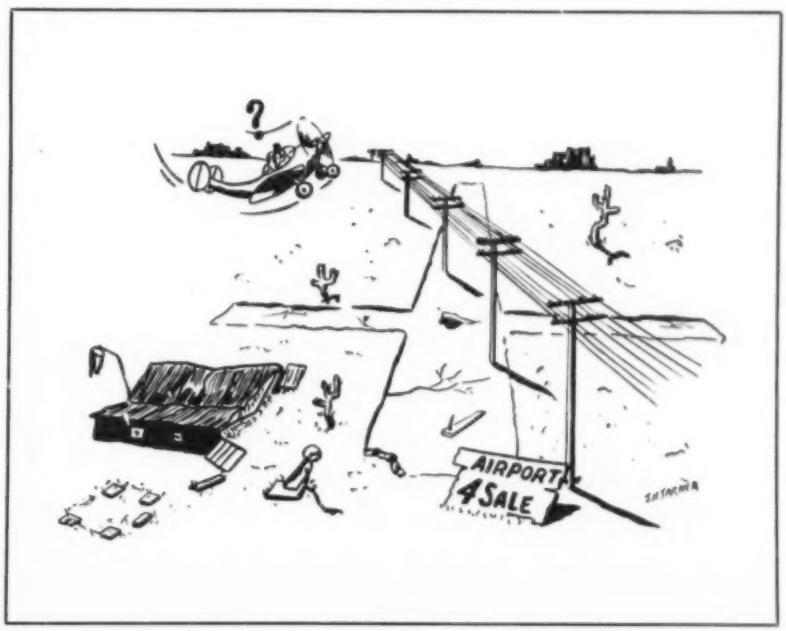
This may be a record. In a little more than three years, Loren R. Moody, Morgan County, Ill., has taken 197 different people for their first airplane ride. That's boosting aviation.

Moody's most recent guest was a 71-year-old grandmother, who can't ride in a car without getting sick. Suffering no ill effects from her light plane ride, she now wants to make some trips by air. Boy, please page the airlines.

* * *

### PROUD TO BELONG

From time to time we've been asked, "Whence comes all the camaraderie at flying farmer get-togethers?" We've always confessed that we weren't quite sure of the answer. Then along comes Mrs. Sarah Jones, wife of an early Arkansas FF president, with an analysis we'll buy. Of flying farmers she writes, "They are just fine people—happy and cooperative. They are," Mrs Jones concludes, "a group to which we are proud to belong."



## We Buzzed Pueblo

*(Continued from page 15)*

ing, as the cadet broke our glide and she began to mush in. WHEN ALL OF A SUDDEN, not 250 feet ahead, the lightplane proceeded to waddle directly out in front of us to the middle of the strip!

It was for sure we couldn't turn enough to miss him. If we tried, we were certain to lose what little lift we had and, hitting in a crabbed position, the resulting crash would have wiped out everyone.

I started pushing everything I could lay my hands on. Prop controls full forward, throttles to the firewall and the wheel as far back as I dared. But still she sank, and when it seemed that the lightplane was right under our nose, as I tried to stand the '25 on her tail, I braced myself and waited.

At what must have been the last split second with every cylinder gulping great charges of 91 octane, those two engines wound up to a mighty crescendo and I felt her take hold and start to fly. Even then I was afraid it was too late, but staggered on, rudder-walking the nose like a homebound drunk, and we cleared the plane with inches to spare. But our troubles weren't over! Ahead was a building and the closer we came to it, the taller it got. Again we missed by maybe two feet and, as we went over the top, I noticed, even though we were pulling everything we had, the airspeed was only 100. In a B-25, even a stripped one, that's too slow. I just had to drop the nose to get more speed and when I did, it put us down a broad boulevard headed towards town.

It was then I remembered to pull up the gear! By that time the street had emptied. Cars turned into byways and alleys, and men, women and children dove for the nearest doorways. And still we stumbled along, the tail getting higher and higher as the airspeed gradually began to build up. But so slow! Suddenly the light dawned. That 45 degrees of flaps we had down for a landing were still down! And now we had it made. So up came the nose, we milked up the flaps and reduced the power settings as we turned towards Raton, N.M., and away from the most hectic moments I have ever spent.

The men in the plane we passed over? The cadet said they were a couple of middle-aged men in a Luscombe. They might have been middle-aged when they turned out on that runway. But I'll bet they were octogenarians 30 seconds later. Myself, I picked up some grey hairs fast.

The day is never so fair, nor spring so sweet that a pilot can depend on the other fellow. Always expect everyone to do what he isn't supposed to do. Never allow another to get you so far into a jam as I allowed the cadet . . . that you can't back out with grace.

Yes, I can chuckle over it now, but there was a minute or so just a few years ago when I was learning about flying . . . and basically about life . . . the hard way. END

## POP'S "STAIRPORT"

THIRTEEN miles southeast of the thriving college town of Lafayette, Ind., lies the village of Mulberry—population 860. It is a typical Indiana small town, no different from many others that dot the flat northern plains of the Hoosier State.

Amazing as it may seem, however, for the past 25 years, Mulberry has had an airport. True, it is a small field, but it has prospered and continued to furnish its owner, John R. "Pop" Stair, with a steady income since its inception in 1928.

"Pop" Stair and his Cessna 140.

Pop is a former engineering instructor who returned to Indiana from Oregon Polytechnical College in 1928 to open his one-man airport. He purchased an OX5 Waco biplane and 12 acres of ground at the northeast edge of Mulberry and entered the passenger hopping business.

The flying game was no bed of roses in those days either, so Pop took up barnstorming on a big scale to keep the wolf from the door. He hit every fair, carnival and "Old Settlers Picnic" in the midwest during the late twenties and early thirties, hopping passengers at a dollar per head.

When barnstorming ceased to be profitable, Pop began teaching people to fly at prices they could afford. Soon he had organized the Mulberry Flying Club and sold it a new 50-hp *Cub*. After 15 years, this six-man club still functions successfully and three of the original members still belong.

Following World War II, Pop purchased additional land and enlarged his field. He acquired a Cessna dealership and for three years sold more planes than any dealer in his territory.

When the postwar aviation boom blew up in '48, Pop again took stock of the situation and came up with a solution. He was only 13 miles from Purdue University and its many aeronautical engineering students, plenty of them prospective flight students if he could give them an incentive to patronize his little field.

So at a time when airports were folding all over the country, Pop instituted a program of cheap flight training. He offered dual or solo time at the same flat rate, throwing in instruction time gratis to keep his planes in the air.

Purdue students tried the plan and found they were able to get in almost twice the flying time for the same money they had been spending elsewhere. They talked; more students appeared, flew, and spread the word to their friends.

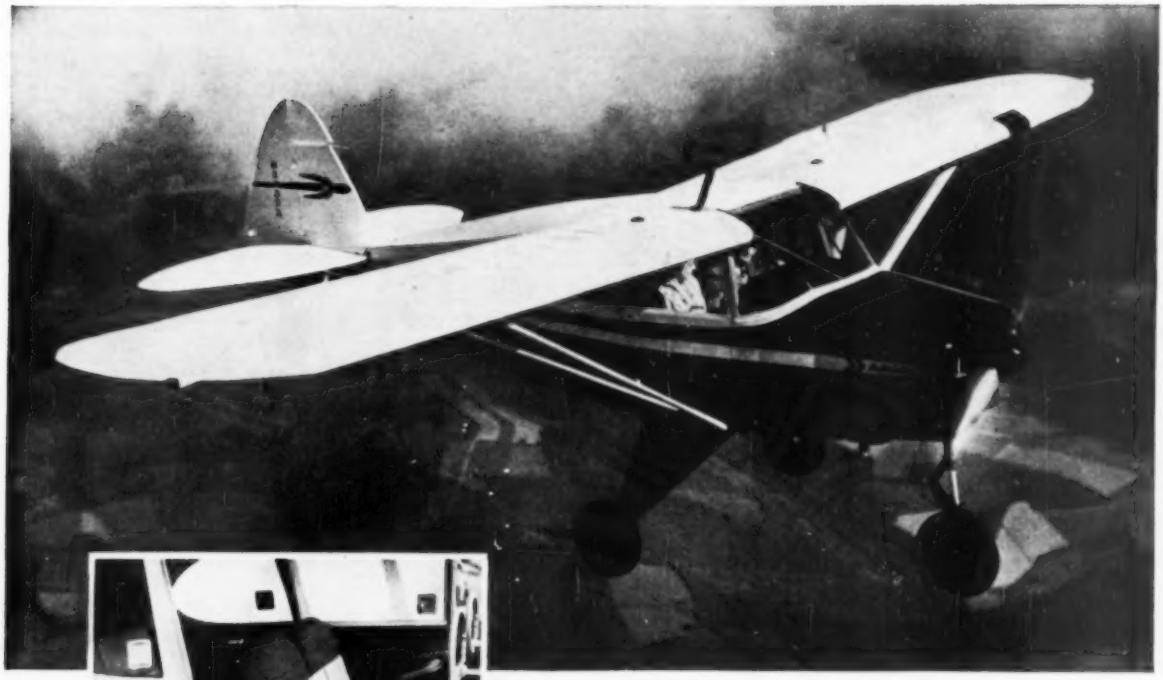
Pop was in clover again. He erected three more T-hangars and a quonset hut office, and bought an additional trainer. His fleet is kept busy seven days per week.

Individual T-hangars.

Drop in some time and see how Pop makes his own breaks. He may never set the aviation world afire, but for sure the fire will not go out as long as Pop is around.

—ELVIN S. CARLISLE

# PICK the PIPER Tri-Pacer for FLYING EASE



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Its flying ease is translated into comfort and safety, too. In rough air it is noted for its solid, big-airplane feel. Its stability and stall-resistance are so perfected that one leading editor and authority on personal airplanes wrote: the Tri-Pacer is "as stall- and spin-resistant as they come."

Yet for all its superb flying ease, stability and safety, the Tri-Pacer is an efficient, cross-country airplane, with over 120 mph cruising speed and over 575 mile range. And you get all this for nearly $2,000 less than any other four-passenger plane—for less than half the price of any other with tricycle landing gear. Little wonder the Tri-Pacer leads all others in sales.

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# WING TALK

### ALASKA RESCUE

Marooned in a deserted cabin in the wild Sustina River country of Alaska when several of their sled dogs died, 4-year-old Timmy Redington and his parents, Mr. and Mrs. Joe Redington, were rescued in a joint action of the 71st Air Rescue Squadron and the Alaska Wing, CAP.

The Redingtons had left their isolated home at Flat Horn Lake for the long cross-country trek to Anchorage to spend Christmas with the child's grandparents. High winds and driving snow coupled with the death of several sled dogs forced them to take cover in an old cabin on the Sustina River. Food exhausted, the family was in danger of starvation when an L-16 of the Alaska Wing crewed by Warrant Officers Warren Day and George Riche spotted the word "FOOD" trampled in the snow near the cabin.

Riche and Day, who had been sent on the mission by the 71st ARS, dropped food and supplies. Returning to Anchorage, they pinpointed the location and an ARS helicopter was dispatched to the scene. The Redingtons, fortified with food and supplies, elected to send little Timmy back by helicopter while they remained to nurse the rest of their dogs back to health and bring them overland to safety.

### NEW RADIO PROTOTYPE TESTED AT CAP HEADQUARTERS

A 7-pound, 9-ounce, airborne VHF transceiver designed specifically to meet the requirements of the Civil Air Patrol's nation-wide search and rescue program was successfully tested by the Communications section of CAP's National Headquarters.

In announcing the results of the "limited tests" conducted in an L-16 liaison plane, Capt. Benjamin W. Hill, USAF, assistant director of Communications, said:

"The tests revealed that this equipment is suitable for installation in CAP aircraft and is capable of fulfilling CAP air-ground communications requirements."

The new transceiver was developed by R. C. Hilliard of Beverly, Mass., president of the Mobilet Corporation, and W. E. McKenney of Washington, D. C., a member of the National Capitol Wing, CAP.

The unit has a two-band, tunable VHF receiver operating from 118 to 123 megacycles and from 148 to 150 megacycles. It transmits on seven channels—five in the lower band for CAA and Air Force operations and two in the CAP frequency band.

CAP Capt. Ronald Hauck, commander of the Indianapolis Squadron, recently received a Certificate of Proficiency from Maj. Gen. Lucas V. Beau, USAF, CAP National Commander. Captain Hauck's record with CAP began when he became a cadet several years ago. He came up through both the cadet and senior ranks to achieve his present grade.

Looking over an old one are 1st Lt. Will VanDusen of the National Capital Wing, CAP, and 1st Lt. Peggy Pate of the South Carolina Wing, CAP. The oldtimer is a 1910 Curtiss *Pusher* owned and flown by Billy Parker. Lieutenant Pate said the plane "seemed solid enough but appeared to be a little drafty."

### NEVADA UNIT SCORES FIND

The wreckage of a Cessna 170 with two persons aboard, missing on a flight from Beckwourth to Winnemucca, was found by John Farnsworth, pilot, and Paul Watkins, observer, both of the Winnemucca Squadron, CAP.

Beginning at dawn, the 18-plane search group began scouring the 150-mile flight route. The wreckage was sighted at 11 A. M., that same morning, on the side of 9800-foot Star Peak.

### '54 AVIATION EDUCATION WORKSHOP SLATED

The third annual National Aviation Education Workshop sponsored jointly by the Civil Air Patrol, civilian auxiliary of the U. S. Air Force, and the University of Colorado, will begin July 22, it was announced by Maj. Gen. Lucas V. Beau, USAF, national commander of CAP.

The mile-high campus of the university at Boulder again will be the scene of the six-week workshop designed to provide a foundation for teachers and instructors who are interested in giving courses in aviation education or integrating aviation education with courses already being taught in their respective schools.

For the third consecutive year the workshop will be directed by Dr. Mervin K. Strickler, one of the nation's first educators to receive a degree as Doctor of Aviation Education. Doctor Strickler is the aviation educationist assigned by the Air Force to CAP's national headquarters in Washington. Other staff members will include top educators such as Dr. Roland H. Spaulding, professor of Aeronautical Education at New York University.

When CAP Cadet Patrick Koontz, a member of the New York Wing's Rome-Utica Group, went for his first familiarization flight in an airplane his father Air Force Capt. Owen Koontz was the pilot of the Douglas C-47. Captain Koontz is stationed at the Rome Air Development Center.


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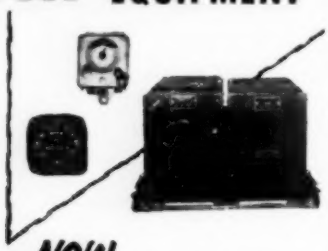

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## GREMLINS?

PORT ELIZABETH,
SOUTH AFRICA

A big constructional program was in progress and we were operating from a corner of the field—a bit on the dicey side at times, what with dodging trucks, bulldozers and the uninitiated who would wander to the middle of the strip and then just stand and stare at your "go 'round again."

We had done some circuits, the Aeronca *Chief* and I, and, on the quiet, she is a bit of a witch. In my hands this is all too frequently the case. On this occasion, however, there was no possibility of rude remarks from the hangar about our performance so we decided to go 'round again.

Taxi back to the boundary, face the circuit, all clear, and 'round into wind. A dripple of throttle to start rolling—grass seems to be a bit sticky—shouldn't hold us back like this, better try a little more throttle.

No, she is just being perverse; wasn't like this ten minutes ago.

Wheel way back, give the witch the gun.

Strange you wouldn't move, didn't even want to lift your tail and your controls felt stiff. Definitely no stones in front of the wheels. Could be my imagination. Have another try. Funny, something wrong here. Better switch off and walk back to report something wrong with the aircraft.

Don't want to make a clot of myself, will never hear the end of it. Still less to make tomorrow's news. Oh, another try then. Wheel back and full bore: this is far worse than before; controls heavy as lead and won't budge an inch.

This little show is far worse than your first full launch in a primary glider. Will have to walk back.

Dog alongside your port wheel; won't do the fabric any good. Better take a pike out the window and see where he's gone.

.....Two little black boys holding onto your elevators! Wait till I get my hands on you!

Switch off—the game is on! Never knew you could detangle your legs from about that compass in such haste. These brats can run. Now they have split up, better concentrate on the smaller, more chance there. Lungs afire, well beyond the boundary by now.

Revenge is only human nature and I will never get back the hair I lost in those few minutes. Come on, you! Good thing Ford came up with his car to see what the marathon was about. In you go, it's no good complaining!

At the hangar, after severe admonishment, brandishing of the verey pistol and the prisoner emulating a puppy dog, you repent and let him go to join the other Gremlin who, if nothing else, was sure fleet of foot.

—S. J. R. MCINTOSH

## Nature's Booby Trap

*(Continued from page 14)*

increase of wind with height can eliminate the wave entirely, leaving only stagnant air in the valley below.

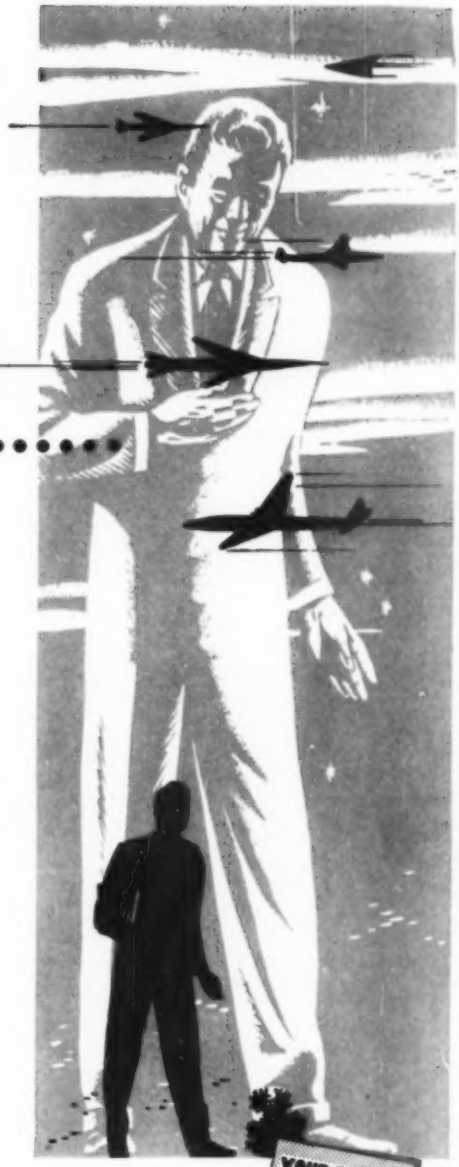
Most dangerous aspects of the mountain wave are the severe turbulence in and below the rotor cloud and the strong downdrafts just to the leeward of the mountain peaks and the rotor cloud. The downdrafts to the leeward of the rotor cloud and the updrafts below it can carry an aircraft into the cloud while the pilot is attempting to fly above or below it. Once an aircraft is caught in the rotor cloud, the best procedure is to "nose down" to pick up speed and attempt to reach the updraft area on the windward side of the rotor cloud to regain altitude. Flight personnel without considerable experience in flying this phenomenon should not attempt a flight through these conditions.

The combined effect of the winter tem-

*(Continued on page 50)*

# TOMORROW'S AVIATION LEADERS ARE IN TRAINING *TODAY....*

## *MANY ARE TRAINING AT* SPARTAN



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AIRCRAFT OWNERS AND PILOTS ASSOCIATION

# AOPA NEWS

Aircraft Owners and Pilots Association is a service organization for the private pilot or aircraft owner. AOPA's full time staff is devoted to helping the individual pilot. Its aim is "To make flying more useful, less expensive, safer and more fun."

Headquarters address is Box 5960, Washington 14, D.C. Members also receive a special AOPA edition of FLYING, newsletters and confidential aviation data. Opinions expressed in this column are not necessarily those of FLYING Magazine.

## NEW TOWER CRITERIA

As part of its extensive economy drive the CAA recently ordered a number of control towers shut down. They selected those towers to be decommissioned on the basis of a criteria that appeared to AOPA to be unfair and unrealistic. Until AOPA dug up and publicized the criteria, it was not generally known in the aviation industry that the criteria on control towers that had been used for some time laid its greatest emphasis on the activities of the scheduled airlines; all other types of flying were relegated to a status that made it virtually impossible to keep a control tower open if the scheduled airlines did not use that particular airport.

AOPA not only immediately publicized this criteria, it also sent a strong protest to Fred B. Lee (AOPA 1585), CAA Administrator. In its protest AOPA pointed out that the criteria being used to close down control towers was so lopsided in favor of the airlines that towers like those at Westchester County Airport, White Plains, N. Y., and Baltimore Harbor airport, were being shut down, although they each were averaging on the order of 8,000-10,000 plane movements a month, while towers like those at Lynchburg, Va., and Pocatello, Ida., each with fewer than 2,000 movements a month, were being retained—solely because of the fact that they served the airlines there while there were few or no airline movements at White Plains and Baltimore.

It appears that AOPA's protest was used as the basis for an entirely new control-tower criteria just released by the CAA. The new criteria puts all plane movements on an equal basis, and does away with the system of giving double credit for each airline movement over all others.

The new CAA criteria now is in the process of being approved by the various Government agencies involved. It establishes an annual minimum of 24,000 plane movements as justification for opening a new tower, and a minimum of 18,000 movements for closing an existing tower. Under the new criteria, the very towers about which AOPA protested—Baltimore and White Plains—will be reinstated as CAA towers (both have been operating with private funds since the CAA applied their old criteria). Also, the towers AOPA pointed out as being examples of what was wrong with the old criteria—Lynchburg and Pocatello—will be discontinued under the new criteria.

Most significant of all, however, is the fact that—for the first time—non-airline civil aircraft are to be treated as equals along with airline aircraft.

## KNOTS

The latest Government proposal that knots and nautical miles be forced on domestic civil aviation appears to be drawing more pointed opposition from pilots throughout the United States than it did when the Government tried to force the edict through the first time, in May, 1952.

A careful check of AOPA mail on the subject shows 91.5% opposed to the replacement of the statute mile with the nautical system; 8.5% favor it.

AOPA continues to lead the fight against forcing the nautical system on civil aviation. The airlines, who originally opposed the system too, now have gone over to the side of the military, contending that, as the result of the last efforts to force the system into adoption, the airlines were bullied into starting to convert to the nautical system, and that they now have converted so far that it will be cheaper for them to go the rest of the way.

## USER CHARGES

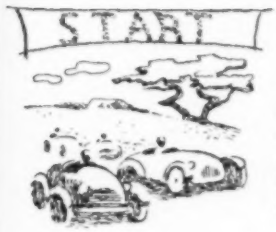
So much strong opposition has come to Washington from all segments of civil aviation that the Department of Commerce now appears to be treading more carefully on the subject of user charges.

AOPA recently wrote its official position on the subject to Robert Murray, Under Secretary of Commerce, pointing out that it appears to be improper for AOPA to comment on a proposal for user charges that is being aimed only at aviation, and apparently not at any other forms of transportation. AOPA's letter went on to point out that we would welcome the opportunity to comment on such a program at a time when the proposed program was part of an overall transportation user-charge program that applied equally and fairly to everyone, whether in the air or on the ground or water.

Several other representatives of the civil aviation industry, including the airlines, have taken a similar position.

"I guess that wasn't the starter!"

# PLANE FAX




## Your Best Week-end Flight Plan for April

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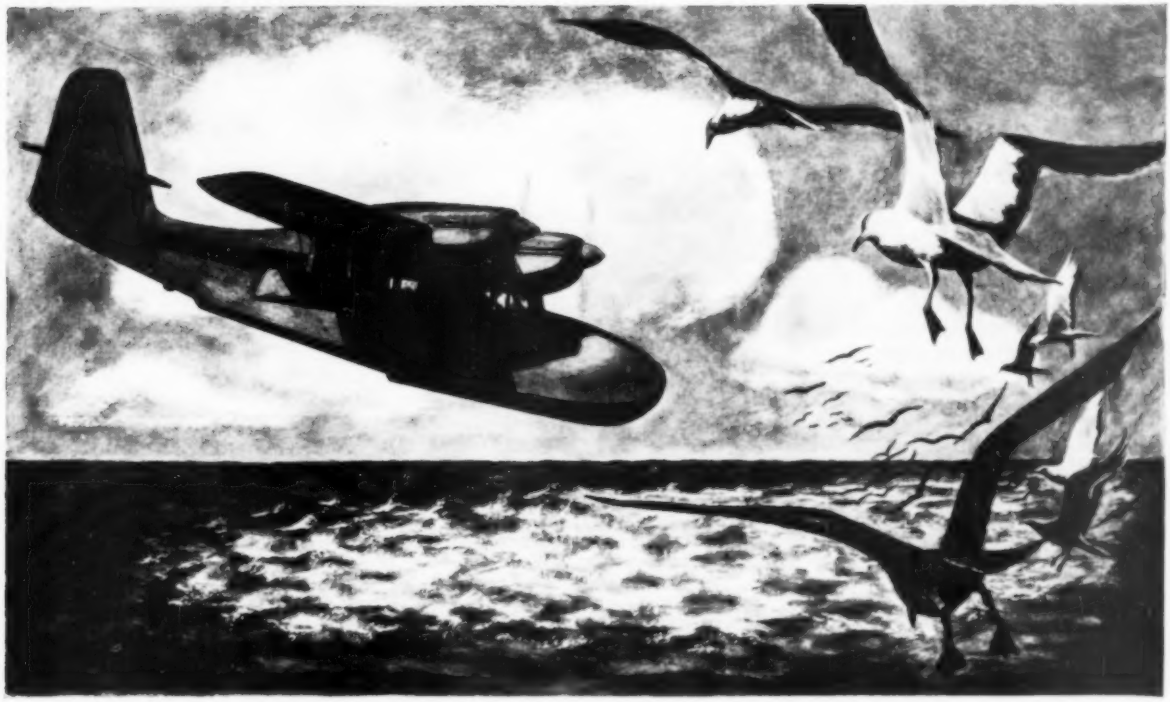

# The flying eyes of the tuna fleet

**Scouting for tuna!** That's W. H. "Hank" Coffin's job every spring, when the tuna start up the Mexican coast. From Whiteman Airpark, Pacoima, California, he flies to Ensenada, where he takes off at dawn to search for the seagulls that fly above the huge schools. He lets down from 5000 to 50 feet to make sure the fish are tuna, then radios his position to the waiting "clipper" boats.

"It's fun to fly low over a sea that's churning with tuna, just as long as I can depend on my plane and its engines," says Mr. Coffin. "I always use *new* RPM Aviation Oil to keep my engines in top running condition—it gives me more safe flying hours. It stops pre-ignition and rough running that's sometimes caused by ordinary compounded oils, and it keeps engines clean of carbon and sludge. With *new* 'RPM', I've been getting 200 extra hours between overhauls.

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## TIP OF THE MONTH

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*(Continued from page 46)*

perature error and the wave error in the altimeter reading coupled with the strong downdraft conditions near the mountain peaks (which are hidden most of the time by the cap cloud) make it almost a certainty that an aircraft flying at minimum clearance altitude would fly *into* the mountain peaks! Since the mountain wave is primarily a winter phenomenon, the temperature error in the altimeter reading results in the pilot's thinking that he is at a higher altitude than he really is.

Flight personnel that have the greatest experience in both flying and soaring under wave conditions indicate that they consistently lost control *completely* for short periods of time while under the influence of the rotor cloud. A BT-13 type aircraft, flown under full power at 10,000 feet from the rotor cloud zone to the mountain peaks, will lose altitude while attempting to climb! During one probing flight, the pilot of a P-38 soared from 15,000 to 30,000 feet in the updraft area with the propellers feathered.

Personnel investigating this phenomenon indicate that they have experienced more hazardous flight conditions in the wave than they have encountered in any thunderstorm. And calculations indicate that jet-type aircraft would experience accelerations of from 8 to 14 G's while flying downwind through the areas of turbulence, making the wave structurally dangerous to these high-speed aircraft.

### Flight Rules

The following rules should be kept in mind for flights over mountain ranges when wave conditions exist or are forecast:

1. Fly *around* the area, if possible. If not possible, select a flight altitude at least 50 per cent higher than the height of the mountain range.
2. Do not place much confidence in pressure altimeter readings near mountain peaks.
3. Avoid the rotor cloud.
4. Avoid the cap cloud area with its strong downdrafts.
5. Avoid high lenticular clouds if the edges are ragged and irregular, particularly if flying high-speed aircraft.
6. Updraft areas, particularly that on the windward side of rotor cloud, may be used to gain altitude necessary to transit the downdraft area and cross the mountain range.
7. Do not fly high-speed aircraft into a mountain wave, especially downwind. Structural damage may result.

### Research

Research into this booby-trap of nature is sponsored jointly by the Geophysics Research Directorate of the Air Force Cambridge Research Center and the Office of Naval Research. Using sailplanes, conventional aircraft, tracking equipment, and time-lapse motion pictures, an insight into the structure and dynamics of this serious problem of aviation is rapidly being acquired.

Actively engaged in the research are Dr. Joachim Kuettner, Mountain Wave Project Field Director, Geophysics Research Directorate; Mountain Wave Project scientists of the Atmospherics Analysis Laboratory; Geophysics Research Directorate; the Department of Meteorology, UCLA; the Southern California Soaring Association; and the Symons Flying Service of Bishop, California.

*ACKNOWLEDGMENT: The writer is deeply indebted to Mr. Ephraim Radner, Chief, Operations Branch, Geophysics Research Directorate, Air Force Cambridge Research Center for permission to use material from the article "Forecasting the Mountain Wave."* END

## Flying the Omnirange

*(Continued from page 35)*

Beach you wanted to fly directly over to the northwest radial of 298 (Fig. 5). The best way for a private pilot to accomplish this is to take a 90-degree bite, or a heading of 208. This means flying farther than necessary, but it is easier to figure. We set the Omni Course Selector (Fig. 1) to 298. When the needle is centered we are on course.

In working these problems, always *visualize* your position on the earth's surface by drawing an azimuth like Fig. 5. We start out north of the station, which is always in the center of the "world" and fly over to our radial of 298. Anyone who uses this method will never turn the wrong direction or get mentally confused, such as turning to the right and going *away* from the station on 298 instead of going *toward* the station on 118.

Perhaps you'd like to know how far away from an Omnirange you happen to be. The problem is quite easy. Going back to our position north of Long Beach Omni, we found that the bearing to Long Beach was 180. We turn 90 degrees to this bearing, which is 270, and make a time check. At the end of a minimum of two minutes (four or five minutes may be required to obtain a large enough angle of change) we rotate the Course Selector and obtain the new bearing in to the station. Let's say it is 160, or an angle of change of 180-160 or 20 degrees.

Substituting in the formula,

$$\frac{60}{\text{Angle}} \times \text{No. of Minutes} = \text{Time from Station}$$

we find that

$$\frac{60}{20} \times 2 = 6 \text{ minutes out.}$$

If we turned immediately to a heading of 160, we should arrive over the station in six minutes under light wind conditions.

Flying your Omni can be fun—and a big help. If you just remember a simple rule here and there it's easy, too! END

**Many a community airport involves less than 76 acres, yet American Airlines alone recently leased that amount of space for construction of facilities at vast Idlewild Airport in New York.**

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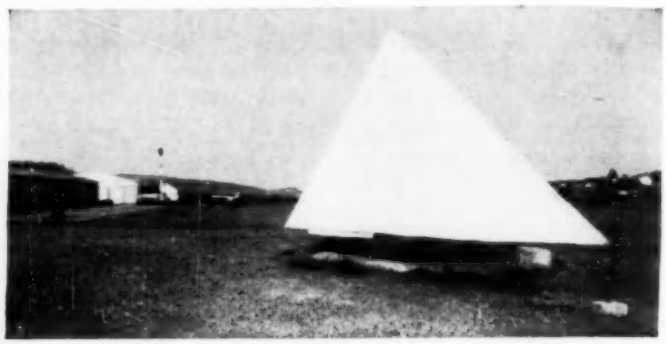
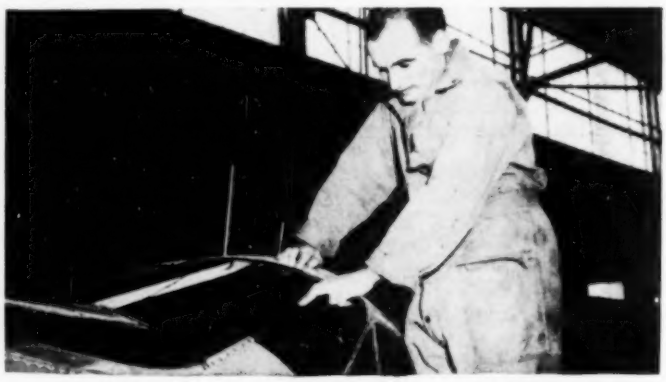


### INDICATOR TURNS ON CASTERS

Rubber casters have solved the problem of providing a substantial support for this homemade combination wind tetrahedron and landing direction indicator, and at the same time make it easily turned—either by hand or by the wind—depending on the way it is being used.

Four 8-inch diameter rubber casters, supporting the tetrahedron, turn readily on a smooth top concrete base about six feet in diameter. A vertical iron pipe imbedded in the center of the base serves as a pivot. When used as a landing direction indicator, the tetrahedron is fixed in the desired position by an iron rod at the pointed end which is supported in a hole in a concrete block recessed in the ground —one for each direction of landing.

The tetrahedron was made at a local industrial school shop by students in a metal working class. It has a welded steel frame and the aluminum covering was made from wings of surplus P-40 planes. The aluminum finish makes it stand out against the green turf background and pilots report that it is very easy to spot from any position while circling for an approach. When used as a wind indicator it is free swinging and responds to winds as low as 5 miles per hour. Its substantial construction and aluminum skin withstands winds of high velocity. The tetrahedron is doing an excellent job at Herb Erdman's Hershey (Pa.) Airpark.



### SCOTCH TAPE SEALS WINDSHIELDS

Leaky windshields on all sizes and types of airplanes are a thing of the past, according to L. Jacobs, owner-manager of the Jacobs Aircraft Co. at Hawkins Field, Jackson, Miss. Electrical "Scotch" tape can be easily and quickly applied to do a sealing job. Most aircraft service operators or local hardware or electrical dealers handle it and it is relatively inexpensive. Before Jacobs tried the electrical scotch tape for windshield sealing, it required approximately five hours to apply the regular windshield putty on a Twin Beech. Other windshield sealers tried were not satisfactory. Now, with the scotch tape, he can do the job in about 20 minutes and he claims that it holds up at least a year, which is the extent of his experience with it. The picture shows Jacobs with a Twin Beech installation that has been in service for a year—and still leakproof.

## Bunkhouse Ballad

*(Continued from page 19)*

of the Ol' Man's property. Then he saw a small group of Herefords about a mile downwind from the main herd. I throttled back, headed into the wind at a little over stalling speed, and by S-turning behind them drove the critters back to the main herd. I can still see those skinny-rumped steers running, their tails windmilling like unfeathered props, and the Ol' Man leaning out yip-yipping at them. Just to show the old cuss a thing or two, I made a pylon turn on the windmill, a hairy peel-off onto final, and landed. He gave me a five dollar raise.

I stayed on the ranch all summer, and in the fall went out into the hills with the crew for the roundup. The Port and I were working overtime chasing down stray stock and taking the Ol' Man on his frequent inspection trips. He liked flying but wouldn't admit he just wanted to go for a ride. During the roundup we slept on the ground and our meals were prepared by Montgomery in a covered wagon on which had been installed a G. I. field kitchen. The cooking was done at the rear of the wagon, while the interior was used to store provisions and extra pots and pans.

#### Man Overboard

One day the Ol' Man was up with me on one of his inspection trips. He told me to fly over the camp so he could tell something to Ramrod. It was not an unusual request, so I throttled back, headed into the strong north wind making good a ground speed of about 25 mph, and came in at about 20 feet over the camp. Suddenly the Ol' Man started yip-yipping and firing his pistol. I looked around; he was out of his seat and leaning out the door. I grabbed him by the belt and was trying to pull him in when one of his shots tore through the right aileron. That scared me. I let go of his belt and chopped the throttle. The Port pitched forward, became suddenly nose heavy, and hit hard on the gear. It wasn't washed out and I landed straight ahead on the next bounce.

When we stopped rolling I turned around to read the Ol' Man off, but he was gone. I tried to get out of the plane but couldn't. On my third attempt I realized my safety belt was still buckled. When I jumped out to run back, everyone was running toward the chuck wagon except Montgomery. He was just leaving.

The Ol' Man had fallen baggage compartment first right on the canvas cover of the wagon which slowed him down a little, then on through into the pots and pans. Montgomery, who was asleep under the wagon, thought he was waking up in hell. When I saw the old devil coming out of the wreckage I agreed with him.

He wasn't badly hurt, but he was sure mad. He was just about mad enough to fire me; in fact, he did. I guess I was lucky he didn't shoot me. END

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## Wilbur & Orville

*(Continued from page 32)*

"You must not say that we invented the airplane," Orville remarked, criticizing a story which I had written. "It simply isn't true. What we really did was to solve the problems of lift and control and apply new techniques to take advantage of the principles we discovered."

If you read carefully, you realize that is all they claimed in their original patent application, filed with the Government Patent Office in March, 1903. *And, remember the first power flight didn't take place until December 17, 1903!*

On another occasion when I interviewed him at his home Orville summed it up a little differently: "We were quite certain the first plane would fly successfully even before we started the motor. In fact, getting the motor started worried us more than whether or not the machine would rise off the ground. The data which we had collected in tests in a wind tunnel indicated beyond any doubt that our formulae were correct. Our later model gliders had proved this. It was merely a matter, then, of adapting available means of power to our basic design."

### First Wind Tunnel

Few people know that the Wrights ever built a wind tunnel. Yet their "wind box," as Orville called it, provided them with the know-how to design an airplane that would fly. That crudely fashioned wind tunnel, the world's first, enabled them to compile tables and figures the accuracy of which is borne out by today's giant tunnels with their elaborate and intricate instrumentation—the very heart of modern aeronautical research.

How did they happen to build a wind tunnel?

I was riding home from an Institute of Aeronautical Sciences meeting with Orville and the subject of the first wind tunnel came up. He recalled an incident which probably more than anything else influenced them to construct the "wind box."

"We had completed a series of successful tests with the 1901 glider at Kitty Hawk," Orville said. "Every indication was that we had pretty well whipped the control problem. But we ran into all kinds of trouble with the phenomenon of air pressures on the curved surfaces of the wings. It led us to believe that the tables of air pressures which we had derived from others were in error. The thought of this frightened both Wilbur and me because if we were correct in our thinking we would be challenging some of the foremost aeronautical scientists in the world."

Because they dared at this point to throw all the previous formulae—the data accumulated by Lilienthal, Maxim, Pilcher, Ader, Cayley and others—out the window and go ahead on their own, they finally achieved success.

"We asked ourselves a simple question," Orville continued. "*Why did the others fail?* It couldn't have been simply because of lack of control techniques. Because we were sure now this problem could be licked. Then, we reasoned, it must be the problem of lift characteristics and air pressures. We believed it would be necessary to turn to something entirely different to find the answers. Since we didn't have the money to build different shaped airfoils and try them out on gliders, we decided to try and simulate the movement of air over the various shaped surfaces by blowing air streams over miniature models of the airfoils. It seemed the only logical thing to do. The idea of a wind tunnel served our purpose."

### Corn Starch Box

He described in detail the improvised tunnel which he designed and built: "An old corn starch box with open ends. It was about 18 inches long and had a glass top to permit observation of the air flow over wing shapes suspended like a weather vane on a metal rod in the test section."

This was the first wind tunnel, so far as is known. It didn't prove too much, but what it did prove spurred the brothers to build a larger tunnel which produced much more desirable results and substantiated their theories. They were right. Their illustrious predecessors had been wrong.

"Had the results of the wind tunnel tests been negative," Orville said, "I'm certain we would never have built another glider. In fact, all our experiments would have ended."

### Dream Into Reality

The Wrights, from the first, attacked the problem of flight differently than all the others. They sought to learn the forces which made an airplane fly before they tried to fly it. Some of those brave explorers died never knowing the secret of flight. Others came close. The Wrights, alone, turned the dream into reality.

Theirs was a two-pronged scientific offensive: (1) To find the most desirable wing shape or airfoil to take advantage of air pressures and lift characteristics. This they accomplished in the wind tunnel tests. (2) To find a satisfactory means of maintaining equilibrium and control.

The latter came first, before they ran their wind tunnel experiments. They actually worked out the modern technique of rudder-elevator-aileron control by experimenting with large kites and later with giant gliders. Again they were confronted with misinformation passed on by others. Previous experimenters had tried to maintain balance by shifting the weight of their bodies. The Wrights tried something entirely new—changing the shape of the airfoils. The invention of the aileron came first.

The story is often told that Wilbur discovered the means of warping the wing tips quite by accident. While toying with the cover of a pasteboard box one day in the bicycle shop he twisted it in such a manner as to present different angles at the ends but without affecting the rigidity of the whole surface. He thought the same principle might be applied to a glider wing, permitting the wing tips to be warped in such a way as to present different angles of attack to the airstream, but at the same time maintaining over-all wing strength. He rushed home to tell Orville about his

**AIR AGE COMMUNITY**

Artist's drawing of the nation's first aviation community (see FLYING, January, 1954) now in the planning stages, where the pilot literally may be able to "fly home." To be built in conjunction with the Desert Air Hotel and Palm Desert Airpark near Palm Springs, Calif., the aviation city will have some 100 homes in the $25,000 to $30,000 bracket, all adjacent to the grassed landing strips. Each will have its own hangar or airplane port.

discovery. In principle, at least, it was the forerunner of the aileron control.

I asked Orville if this incident were true.

"Yes," he said, "the box top gave us the clue as to how to warp the wing tips. But we had been thinking of the idea long before Wilbur discovered a means of application."

### Da Vinci's Idea

"I believe," he recalled after some serious thought, "that we got the idea from one of Leonardo Da Vinci's books. I'm sure Da Vinci mentioned that during his observations of bird flight he noticed the wing tip feathers ruffled up and changed the wing shape. Da Vinci inferred this had something to do with a bird's ability to control itself in flight. We simply applied the technique mechanically to the wings on our glider."

As early as August, 1899, the Wrights built a large biplane kite and tried out the wing warping method. It proved capable of maintaining "sidewise balance."

Longitudinal stability — up-and-down control—was something else again. (It was lack of this, they were certain, which had plunged Lilienthal to his death during one of his glides.) To attack the problem, the Wrights first tried out a technique of moving their wing surfaces one ahead of the other changing the air pressures so as to obtain a teeter-tottering motion. Results were far from any semblance of stability. Too many times the big kite dived precariously toward the earth.

Next, they tried the addition of an "elevator" in the rear. This was copying the idea of others. By shifting it fore and aft they got the same result as shifting the main upper wing, with a great deal less effort.

"All it really proved," Orville said, "was that a separate plane surface was needed to effect control around the longitudinal axis. But the stationary 'elevator' wasn't the right answer by any means."

### Longitudinal Control

Trial and error, Wright explained, actually produced the key to longitudinal control. For one thing, they put the "elevator" in front instead of in the rear and noticed an improvement. Then, instead of just moving the "elevator" forward and backward in a flat plane, they put it at an angle to the wind. Later they made it operable, capable of moving anglewise like a flap, to present a convex surface to the air instead of just a flat surface.

This device, which none of their predecessors had tried, gave them satisfactory up and down control. Applied to the 1902 glider, the largest machine of its kind ever built up to that period, it permitted them to make more than 1,000 flights. Some of the glides covered more than 600 feet and were made in extremely high winds. They broke all records for gliding. Still there remained one more step before they attained what they

*(Continued on page 56)*




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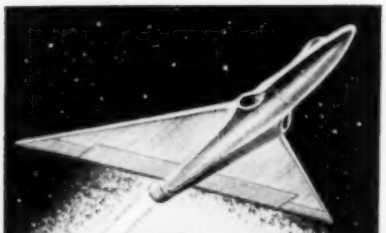

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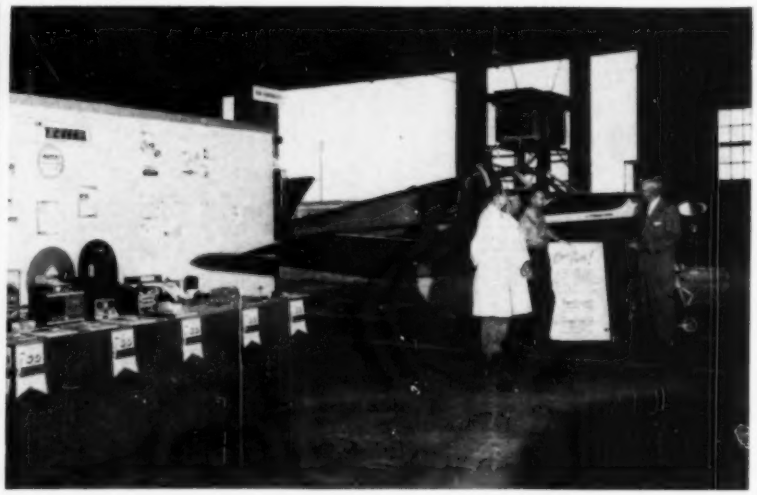

**MOTION PICTURE DIRECTOR GREETS BEECH SERVICE TEAM**

Several years ago Beech Aircraft Corporation inaugurated an annual program of sending trained factory service personnel on tour. Purpose of the tour is to make a free inspection of all Beech aircraft at their home bases, and give owners a complete functional report on their planes. This year Henry King, noted film director for Twentieth Century-Fox Film Corp., greeted Jack Marler, Henry Cordes and Jim Colvin of Beech Aircraft on their arrival for a two weeks working stay in Southern California.

*(Continued from page 55)*

believed to be a truly workable control system.

Not until Orville almost broke his neck, when the machine during one of its glides suddenly went into a tail spin, did they know what was wrong. The stationary rudder or vertical fin had to be made movable just as did the elevators. This they did, and the result was an operable mechanism which accomplished the wing warping and the rudder motion at the same time. The operator could accomplish this by twisting his hips in a special cradle. It produced the same effect as the stick and rudder controls on the modern airplane.

The Wrights were ready now to build a power-driven machine.

**Propeller Design**

"We thought it would be merely a matter of adapting a light-weight motor and propellers to the big glider," Wright often explained. "But we had to turn to the wind tunnel again before we could get a propeller design that would create enough disturbance to cause the wings to lift."

At this point they made another important discovery—that the propeller was merely a revolving airfoil!

Orville Wright had a pet phrase for it. He said—"We found out what was needed was *horizontal lift*."

It was one of his few "jokes" but it also had its serious implication. The brothers ran many experiments using propeller designs copied from marine tables. These all failed to produce desired performance. Not until they carved their own airfoil prop blade did they get the air forces which they deemed necessary to lift the glider off the ground.

The combination of all their experiments permitted the first plane to lift itself off the ground, rise into the air under its own power, fly straight and level under an operator's control, and land upright at a spot higher than that from which it took off. True, it remained aloft only 12 seconds. It attained a height of only 12 feet on that first attempt. It traveled only 120 feet, less than half the length of a football field. But the Wrights had done the impossible. They had flown in a heavier-than-air, man-made machine.

That first flight with Orville at the controls started at 10:10 a.m., Thursday, December 17, 1903. The next 12 seconds changed the destiny of mankind.

Yet Orville Wright, in the *Constellation* that day in 1945, told me that so far as he was concerned the success of the first flight was overshadowed by one other event in the airplane's history.

"The day we made the turn," he said. "It was with the second power-driven machine which had some improvements over the Kitty Hawk craft. I made a complete circle of Huffman cow pasture. It was the first time we had ever been able to accomplish this feat. It meant the airplane had come into being. It was no longer just an experimental machine, but a practical mode of transportation. It could go and come back from here to anywhere."

END

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## Flying Houseparty

*(Continued from page 29)*

nals at Chicago, Detroit, Cleveland, Pittsburgh, New York, Philadelphia or Washington adds about $100.

The airline offers a one-week stopover at Miami Beach, if desired, providing the passenger continues with one of its foreign tours. If a vacationer wants to prolong his visit at any one spot on the island tour, he can buy a week's extension and join the next Resort cruise coming through for the completion of his trip.

A rough average price for a two-week foreign vacation from one of the coterminal cities would be $500 during the favored winter months. At that season, Resort's clientele runs heavily to professional men with their wives. An attraction for business couples and office workers who take vacations in the summer is this year's inauguration of "bargain" cruises at reduced summer rates.

According to Resort president, Walter Sternberg, the facilities offered by the airline, including escort service, would cost a full third more if purchased separately by the individual passenger. Reason is that the company rents blocks of hotel rooms, limousines, etc., at wholesale rates on a year-round basis, and can pass on the savings to its customers.

"What we have," says Sternberg, "is more like an ocean cruise of the Caribbean than anything else. However, we offer more departures and more destinations in a given time.

Sternberg has coined a pair of new words: "nightseeing" and "flightseeing." Since you don't have to spend nights aboard ship steaming between destinations, there's time for seeing night life in the tropics. Since you travel by air and in daylight hours, you get a matchless view of island scenery and points of historical interest along the route.

Resort flies at altitudes to encourage an orgy of film consumption by camera fans. Its schedules are drawn with leeway for planes to detour above scenic landmarks. Despite these leisurely flight practices, Sternberg points out that Resort's cruise passengers spend less than ten per cent of their time in traveling!

Experienced aviation men who have analyzed the Resort operation say there is nothing quite like the relaxation and camaraderie engendered on a flying houseparty. Within minutes after a Resort departure from Miami, the cruise manager will have introduced everybody to everybody, gotten a bridge game started in the card room, and asked the stewardess to open the bar. Within half an hour the whole crowd will be mingled happily and making new friends.

Passengers find a unique sense of participation in the business of flying. Chatting with the plane crew and cruise manager, ticking off sights below, they come to feel the airplane belongs to them. And for the period of their flight it does. Would somebody like to see Watling's Island where Columbus made landfall in the New World? Sure! The captain will swing 30 miles off course to pass over it. Does an amateur photographer want to circle La Citadelle on Cap Haitien for a color picture? The captain will oblige.

A recent survey showed that two-thirds of Resort's passengers had not traveled by air on their previous vacation. The company believes that one of its greatest accomplishments has been to show thousands of Americans for the first time the comfort, luxury and fun of leisurely air travel.

Key to the vacationer's freedom from care is the cruise manager. He gets baggage on and off the airplane and delivers it to hotel rooms. He handles customs and immigration procedures. He counts noses and rounds up stragglers. He is available at all hours for advice on what to wear, what to eat, what to see, and how to tip. He can tell passengers that Arpege perfume sells for $8.50 an ounce in Haiti and $8.00 in Jamaica (price state-

Caribbean-bound vacationers board one of Resort Airlines' new DC-4 planes at Miami, Fla.

side: $29.60).

If a young group decides to take a bicycle trip, he can get the bikes. If somebody has a toothache, he knows a good dentist. If a lady wants a date with a gentlemanly Cuban, he can arrange it. More than a few of Resort's lady passengers have settled on tropic islands to marry local citizens met through a cruise manager's introduction.

How do American tourists take to all this coddling? Judging by the increase of Resort's business, they love it. The airline's 1953 traffic figures were up 800 per cent over 1952!

Resort stoutly maintains that its air cruises are not competitive with point-to-point air service, but indeed generate more business for the regular carriers. Sternberg points out that Resort gets a large proportion of tourists going abroad for the first time. They want the security of an escorted tour on their initial venture into foreign lands. After becoming familiar with the islands, many of these passengers return to some one favored spot on a later vacation. And when they do, they fly by regular carrier.

Resort schedules only one flight within the continental U. S., hauling cruise traffic three times a week from New York via Philadelphia and Washington to the jump-off point at Miami. Cruise passengers from the midwest co-terminals are ferried to Miami by other scheduled airlines under a split-fare deal. Today American, Capital, and Northwest, together with the major travel agencies, American Express and Thomas Cook, issue travel folders jointly with Resort to promote its vacation cruises.

Sternberg is happy to see people get to Miami any way they want to travel. For the convention gatherers, sales groups and private plane owners who flock to the sunny metropolis every year, Resort offers a chance for friends to go on together and see a little more of the world in an atmosphere of holiday enjoyment.

A big potential for Resort lies in the sales incentive plans adopted by an increasing number of U. S. corporations to spur the efforts of employees and distributors. A favorite prize in contests of this sort is the escorted travel tour. Resort stresses the fact that the airline has a complete sales incentive plan built right into its regular service.

Once in a while a guest proves a little difficult to please. Bill Reams, a cruise manager, tells about the girl passenger on one trip who came to him after the party's arrival in Haiti and sounded a bitter complaint. She had been under the impression that she was headed for Tahiti!

Resort someday may have leisurely rocket vacations to Tahiti, but the next extension for which Uncle Sam has already granted Resort a certificate will more likely be all-expense air tours of the summer northland—Quebec and the Maritime provinces of Canada.

But in the meantime the aviation world watches with interest the little company with the big idea. If Resort is right about what people want, they have opened a new horizon of limitless possibilities for both the public and themselves. END

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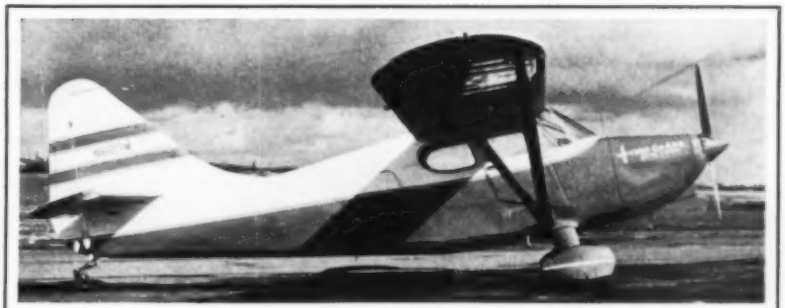

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## The Free-Fall French

*(Continued from page 27)*

still folded canopy—streams up after it. The top of that narrow sleeve swells, the swell expands downward to make the canopy look like a balloon for a fraction of a second. Suddenly, the bottom edge of the canopy, which has remained practically closed all this time, spreads wide apart under the force of the downward rush of air and, in one instant, it is open, like a huge umbrella, seemingly stopped cold in mid-air while a second before it was still being pulled down at a speed close to 100 mph. Almost immediately, a loud bang reaches our ears on the ground: the delayed report of the opening which, in calm weather, sometimes sounds like a fair-sized powder-blast.

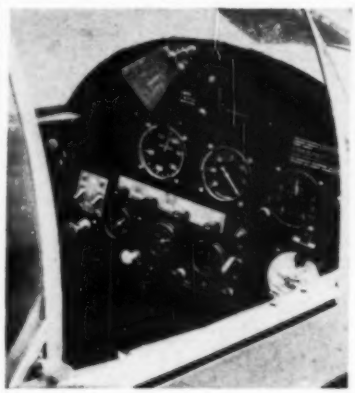
One by one, at about two-second intervals, the process is repeated as each parachutist comes down to opening level: the white visual explosion and the auditive one which follows. The opening-shock is great but, by correct bracing, the jumpers know how to spread shock evenly and make it acceptable. All eight now dangle in approximately a straight line and in the same relative positions they had when leaving the plane. The falling time has been 35 seconds, the distance dropped: one mile—an average training fall.

The chutists float down from 1400 feet with a vertical speed of 12 mph. Landing is still ahead, but to these veterans with over 100 jumps, most of which are delayed-openings, landing is routine on the large grassy field. One of the dots we have just watched dive through space for 35 seconds is a girl, Monique Laroche. She holds the feminine free-fall record with a drop of 74 seconds. The school ratio of girls to men is about one to five.

This is an average Sunday scene at the training field near Paris where close to

Albert Gaulard, chief pilot for parachutists, has 7,000 accident-free hours.

100 young people from all walks of life flock every week end to jump. Also there are several other fields in France for the same purpose. At this particular field, the eight-passenger plane takes off all day long carrying parachutists to altitudes from 1600 to 13,000 feet for jumps, varying from the static-line and short three-second fall to the 80-second drop to almost 12,000 feet.



### WAKE 'EM UP

An ordinary cowbell attached to the wigwag flag gear-position indicator on the Mooney M-18L warns forgetful pilots who fail to notice the flag signal while approaching for a landing with gear retracted. A piece of ⅝ in. steel tubing, 1 ½ in. long was inserted in the strap aperture of the bell and welded in place. A hole was drilled in the top of the signal flag and the bell bolted on with a ⅜ in. bolt and an elastic stop nut. The bell is held rigid with its vertical axis and the signal flag arm coinciding.

This installation was devised by Bill Swart, operator of Rome Flying Service at Rome, Ga., after two wheels-up landings of his Mooney by rental pilots. Swart reports the cowbell cured the sleepers.

—TOM DUNKIN

How, the layman will ask, can anyone be so casual about falling a mile through space? The answer lies in one word: training.

The French program of parachute training with an enrollment of several hundred, including about 200 licensed free-fallers, has proved that what once was considered dangerous can be made, through rational progressive training, into a fine sport practiced with minimum risks. Over five years much has been learned from the thousands of falls performed at the school, with a safety record far better than many sports. The French parachutists, backed by veterans, have won their fight for recognition. Parachutism is now a government-controlled and subsidized activity. By officially regulating jumping, the French have eliminated the foolhardy and the crackpots. Parachutism has a status similar to flying. The free-fall, as an inherent part of all free-type (with a ripcord) jumping, has been accepted. Beside the static-line license for beginners, one must perform correct eight-second falls to obtain the right to use a ripcord parachute, emergency bail-outs excepted, naturally.

The two training courses, necessary for the two licenses, one of which (the automatic-opening static-line jumping license) is a prerequisite of the other, are given during a three-week period, comprising

15 jumps. Equipment is furnished by the government. All work is supervised by professional instructors. They can spot a risky subject at a glance. Backing out on a jump is practically unknown at the school. All students learn to pack their own parachutes and do so throughout their careers. This is a considerable morale element. Nervous strain is present during first jumps and first free-fall tests but the mixing of groups, elementary and advanced, and the presence of veterans who inspire confidence, dispel much of that. The casual spirit has been developed as a tradition at the school. Jumping is taken as a problem which will respond to technical knowledge.

When beginning to free-fall, students must time their fall in seconds. Little attention is then paid to ground-distance as wide safety-margins are taken by the instructors. The emphasis is on timing. The student finishes his course. He learned to stabilize properly—a far from easy task—and for this uses a chronometer strapped to his front-chute to facilitate learning. Above all, he now observes the ground more carefully on the way down. When he reaches falls of over 30 seconds, an altimeter is added, for speed of falling varies at high altitude, and timing becomes less accurate. With the aid of the altimeter, the jumper learns to appreciate ground-distance with accuracy and emphasis is shifted from timing to the ground itself. Finally, one day, he jumps without instruments, forgets about the length of his fall and opens on sight alone. This is the final test of virtuosity. He can say he has achieved mastery of his art. Nothing can depict the elation which accompanies this last victory over the ancestral fear of falling.

France encourages civilian jumping as a morale activity, a source of national pride. The French parachutists captured the world championship in free-fall last year in Yugoslavia. Chute manufacturers eagerly observe the long-range behavior and wear of the equipment used at the school, and returned to them for periodical inspections.

But if there were no other justification to this thrilling sport, it would be enough to many that it engenders powerful ties of comradeship. Along with mountain climbing and ski jumping, to which it bears a strong moral resemblance, parachuting is a *noble* sport and deserves its place in that realm. END

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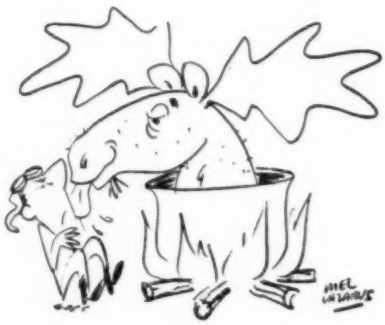

## MOOSE-GLUED CRATE

**by Harold Helfer**

Suppose you were an aviator and found yourself with a broken propeller somewhere in the icy wilds, a thousand miles from nowhere. What would you do?

Well, it happened to E. G. Fullerton of the Royal Canadian Air Force, and what he did about it still makes a fascinating page in the saga of ingenious aviation.

Actually, the aviator could have been a lot worse off. His Junker monoplane had come down at Fort Simpson in the Northwest Territory of Canada. So he didn't have to worry about the food problem. Or keeping warm.

But getting away from there was a very real problem. It was the dead of winter. Rivers were frozen over. It would be many months before a new propeller could be delivered to him from Elberton, something like 1,000 miles away. This was in 1920, when transportation troubles were not given the streamlined handling they get today.

Still, even with food and warmth, Fullerton did not relish the idea of being cooped up in that all-but-God-forsaken place for a half-year or so of his young life.

So he carved some boards in the shape of a propeller. Well, that seemed a fine enough idea, as far as it went. But it left a big problem.

How were the boards to be glued together?

With the wooden blades whirring around at hundreds of revolutions a minute, it would take a pretty substantial sticking substance to keep those pieces of wood from flying apart. And there didn't seem to be any glue at all at the fort that would do the trick.

Then Fullerton chanced to come upon some old, greasy-looking moose hides and got an idea.

Putting the hides in a pot of water, he began to boil them. When the pot had boiled itself down, he found that, lo and behold, he had a very thickish, sticky residue!

With this he glued the boards together into a full-fledged (he hoped) propeller which was soon installed on the Junker. Giving the improvised prop a whirl, he hopped into the plane and clattered off into the sky—back to civilization in his moose-glued crate.

## I learned about flying from that

*(Continued from page 38)*

by static, there was no possibility of contacting ATC for clearance to return. Further I continued to expect to clear the overcast in the vicinity of 8,000 and, once clear, hoped for better reception. I abandoned the idea of returning.

I passed 8,000 and looked up for the telltale silvery bright streaks that filter through the top layer of an overcast and mark its end. There was absolutely no sign of the top. At 12,000 there was still no sign.

I began to worry about oxygen. I had flown many times, uncomfortably it is true, at 12,000 to 15,000 feet without oxygen, but never above 15,000.

At 15,000 I reached for the end of the tube in the hope that I could breathe from its end even without an oxygen mask. At that moment I received a garbled message from Oakland. As I had to use my left hand to press the microphone button, I dropped the oxygen tube and called Oakland for a repeat on their message. Once again I was unable to read anything through the static. Again I fumbled for the oxygen tube, only to find that the end had fallen to the cockpit floor and was jammed under the seat. While trying to free the tube, I was forced to look away from the instrument panel momentarily. When I checked the panel again after a futile effort to release

the tube, I found I had gone into a steep right turn. I immediately corrected the attitude of the plane, and then suffered an attack of vertigo.

The vertigo, the worry over need for oxygen, the loss of the Moffett beam, and the knowledge that to return meant a let-down with no range available and no radio contact, combined with lack of current weather information at Fresno, all added up to an unreasonable magnification of my troubles. I continued my climb to 18,000 where my forced breathing made me realize that it was dangerous to climb any higher without oxygen. I retained enough common sense to descend again to 15,000.

I called Oakland Radio and gave them my estimated position, requesting permission to continue my flight at 15,000 and advised that I had no beam receiver and no oxygen. A garbled receipt of my message came back and a short time later another garble gave me clearance to continue.

I checked my watch and airspeed against my dead reckoning data, and estimated that I was within one minute of the Salinas intersection. I continued on, then turned southeast onto Blue Ten with a worried hope that my estimated position was correct. An attempt to tune in Salinas Range and Fresno Range met with no success.

After ten minutes on this leg of my flight, I was startled to hear an Air Force plane calling Fresno come in loud and clear. He reported on top at 21,000. I listened closely for Fresno to reply but was unable to read them through the static. Then, to establish some contact with Fresno, I called the Air Force pilot and requested that he relay my message, giving time, altitude, estimated position, and advising them that I was on instruments with no beam receiver. The pilot acknowledged and passed the message on.

After another five minutes, the rain slackened. The mist appeared to be thinning. I called Fresno again. With considerable relief, I heard them come in fairly clear. I repeated my predicament and requested a steer to the closest contact weather. Fresno acknowledged and advised that Bakersfield was reporting clear with a 15,000 foot overcast. I continued on course until the time expired, then turned onto Amber One towards Bakersfield.

In the turn I looked down and I could see the ground through the haze. I cancelled my instrument flight plan with Fresno and made my let-down, keeping the ground in sight. At 6,000 feet I broke into the clear two miles south of Fresno. With a complete sigh of relief and a mental pat on the back for at least having sense enough to complete my D.R. data prior to take-off, I again headed for Bakersfield. On the way south I tuned in the Fresno beam and, to my surprise, it came in loud and clear.

Upon landing at San Diego, after an uneventful flight from Fresno, I checked my plane with the help of a radioman. Neither of us could find anything wrong until I noticed a piece of masking tape, left by the painters, covering one of the insulators on the MHF antenna. The tape had become wet, shorted the antenna and thus cut out reception of the beam. Upon descending to a lower altitude, the tape had dried enough to allow adequate beam reception.

Had I checked my plane thoroughly prior to take-off, I would have noticed the masking tape, or had I returned for my oxygen mask, I could have climbed above the overcast and continued comfortably at altitude. In any event, I learned about flying from that. END

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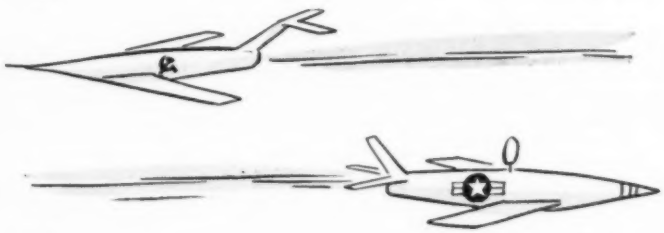

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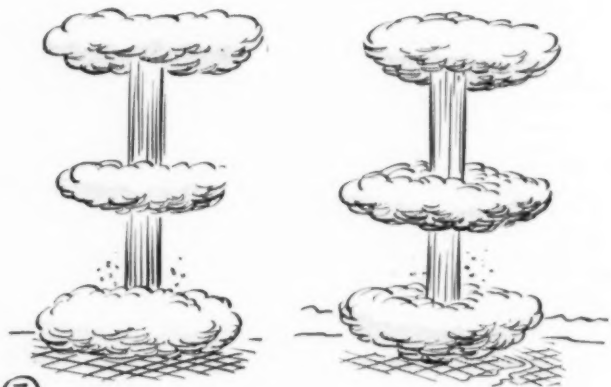

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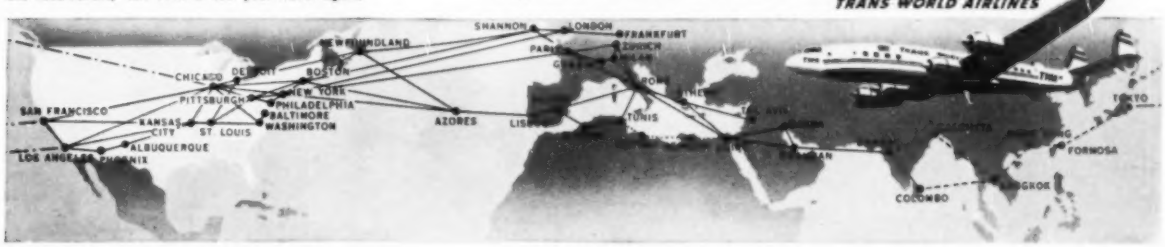

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